

In This Issue—*The Second Ford Service Article*

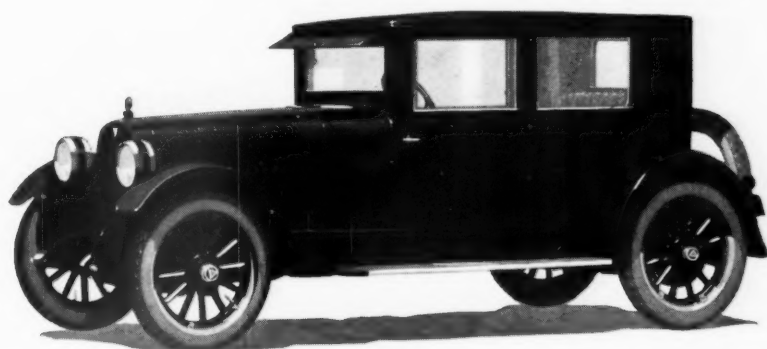
MOTOR AGE

Vol. XLV
Number 11

PUBLISHED WEEKLY AT THE MALLERS BUILDING
CHICAGO, MARCH 13, 1924

Thirty-five Cents a Copy
Three Dollars a Year

H U D S O N



The New Hudson Coach Has Won Instant Popularity

The Coach
\$1475

Other Models

Speedster	- - -	\$1350
7-Pass. Phaeton	- - -	1425
Sedan	- - -	1895
7-Pass. Sedan	- - -	2145

Freight and Tax Extra

The attractions of a more beautiful and comfortable body, with the greatest Super-Six chassis ever built are combined in the new Hudson Coach.

Also unmatched price advantage. At \$1475 it costs but little more than the open models. Yet it offers the wanted comforts, distinction and all-season utility of a fine enclosed car.

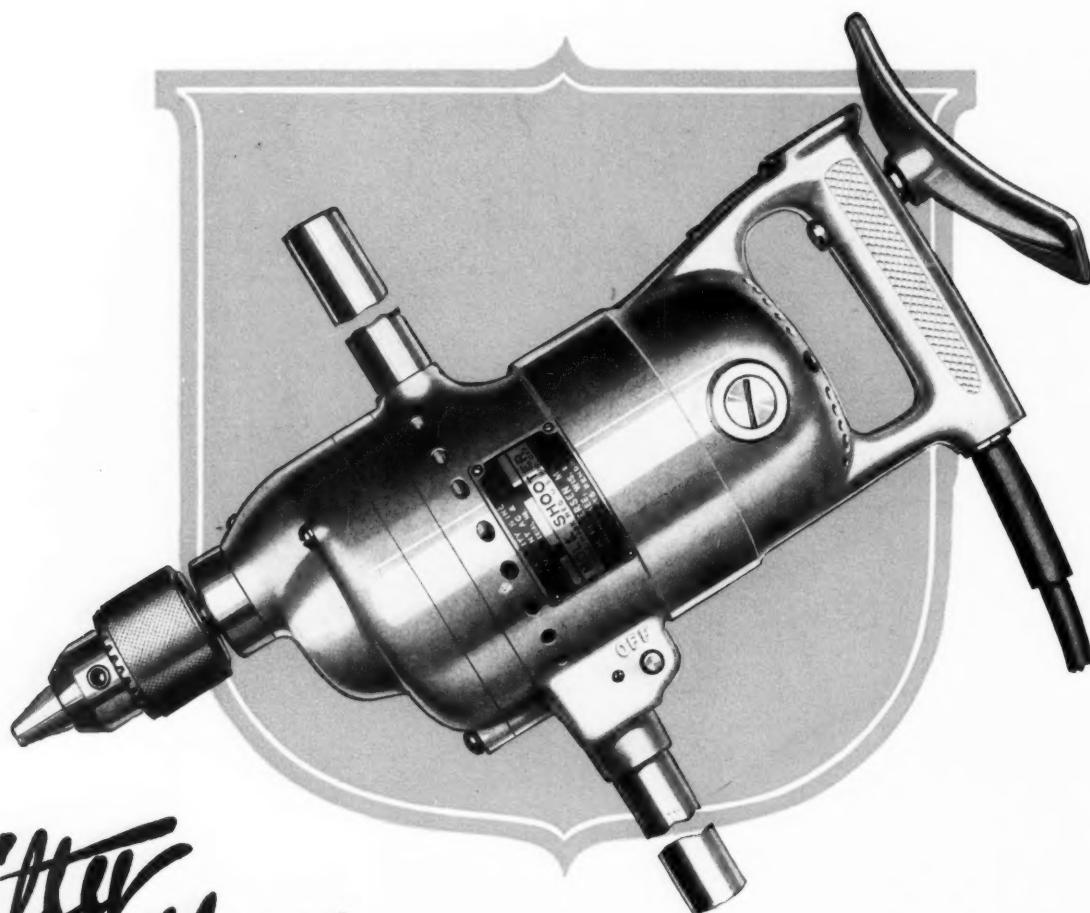
The Coach is one of the most beautiful cars of the Hudson line. It is a car you will be proud to sell. And it provides you with selling points that buyers want today.

The immediate, unmistakable welcome the new Coach is receiving proves its advantages both to dealer and to buyer. Hudson has always been the largest selling of the fine cars. The distinct advance in design and value of the new Hudson Coach gives a powerful new impulse to this sales leadership.

Some desirable territories are open. Write today.

Wouldn't You Like To Sell It?

Hudson Motor Car Company, Detroit, Michigan



*fifty
dollars*

It can be done!

What? Make an honest-to-goodness $\frac{1}{2}$ " drill for \$50!

We would rather have you think of the quality of Petersen tools than the price. BUT, as it is so human to think in "price," we wish to emphasize the quality at the same time.

Owing to the quantity production of this $\frac{1}{2}$ inch drill—like that of our Famous $\frac{1}{4}$ in. Hole Shooter—we can produce the best light weight drill in service to sell at \$50.

Write for "handy" catalog and the name of jobber in your vicinity handling the complete line. We will arrange for a demonstration in your own shop.

A. H. PETERSEN MFG. CO.
1616-24 Fratney St. Milwaukee, Wis.

Just look at the picture of this Big Brother to the Hole Shooter. Isn't it a well-balanced, compact package of power?

Get it into your hands. Put it to a cylinder honing test and you'll say "atta-boy, that's THE DRILL and it's only \$50."

A written guarantee for one year gives you a long time trial.

**OSCILLATING - REVOLVING
VALVE LAPPER**

Automatic, double-action—the only electric tool that revolves while it moves back and forth. Perfect velvet seating. Guaranteed

\$39

PETERSEN

Guaranteed

**HALF INCH
ELECTRIC DRILL**

*1200 Dealers
selling other cars want
the New*

MOON

\$995 Six

The first distinctive high-grade six to sell for less than a thousand dollars!

The interest in Moon cars, and in the liberal Moon franchise and financial co-operation, is now greater than it has ever been! 1,200 dealers selling other cars want the New Moon Six!

Shown for the first time at the New York Automobile Show. Even before seeing the car, and with but a meager description of it, hundreds of dealers wrote for the Moon franchise! They knew that a six-cylinder car at \$995, with Moon's outstanding characteristics, would be a big sales producer in 1924!

Distinctly a Moon! Moon mechanical excellence throughout! Famous *proven units*, of course: Special Moon Continental motor. Delco starting, lighting and ignition. Warner transmission.

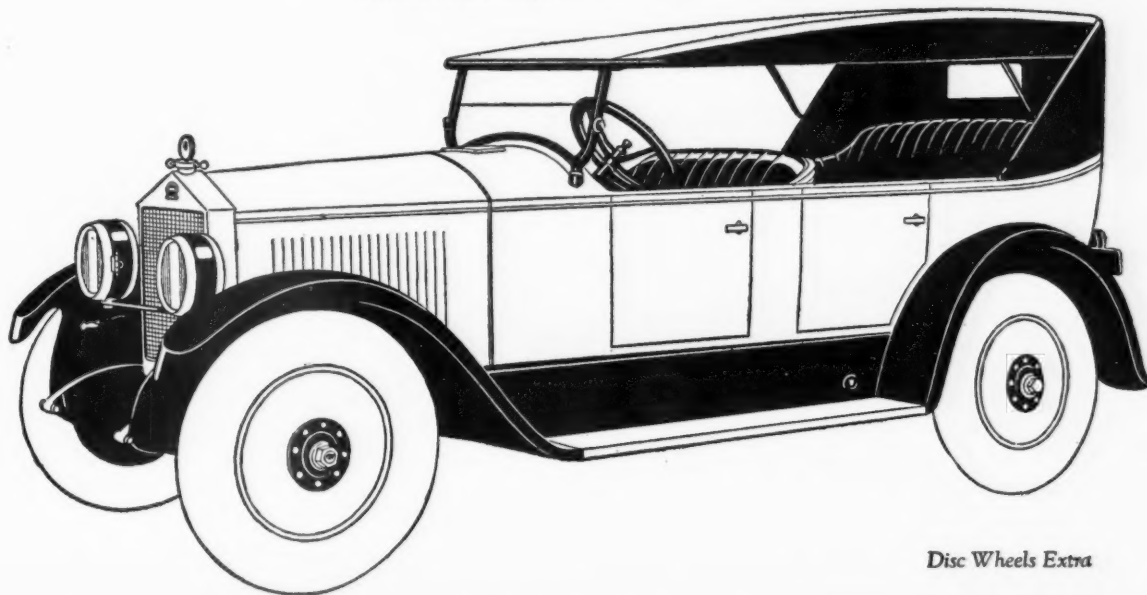
Ross steering gear. Borg & Beck clutch. Timken axles and bearings!

A powerful man-size six! Sweepingsport contour! Familiar Moon silver radiator! Roomy 5-passenger capacity. Genuine leather upholstery! Cord tires! Two-piece windshield. Cowl ventilator!

Think of a car like this selling for only \$995! The lowest price at which a Moon has ever sold. A car people will want—and buy! It completely rounds out the Moon line. Enables you to meet all competition. A big opportunity awaits live dealers! Get the details of the New Moon Six, and the Moon franchise, at once!

The complete Moon line now offers a wide range of open and enclosed models, priced upward from \$995. Three series in addition to the new popular-priced six: the Six-40; Six-50; and Six-58.

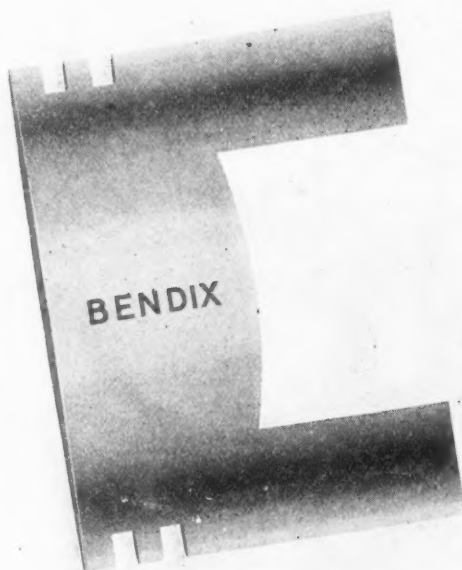
Built by MOON MOTOR CAR COMPANY, St. Louis, U. S. A.
Stewart McDonald, President



Disc Wheels Extra

Moon Has Adopted Lockheed 4-Wheel Hydraulic Brakes! Optional on All Models at Additional Cost

THE NAME "BENDIX" IS ON EVERY GENUINE PART



(Patent Pending)

CAUTION: In our Bendix Drive advertisements, appearing regularly each month in The Saturday Evening Post and The Literary Digest, the public is being cautioned to buy none but genuine parts and to look for the name "Bendix" on each part.

The Bendix Service Sleeve

Easily Installed

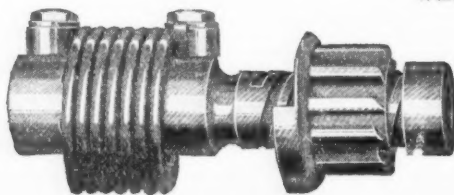
A hammer and blunt chisel are the only tools required to do the work quickly and easily. Two sizes give service on all models.

It pays to sell none but
GENUINE PARTS
FOR
BENDIX
DRIVE

ECLIPSE MACHINE CO., ELMIRA, NEW YORK

Detroit Office
1342 Book Bldg.

Eclipse Machine Co., Limited
Walkerville, Ontario



MOTOR AGE

Reg. U. S. Pat. Off.

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Entered as Second Class Matter Sept. 19, 1899, at the Post Office at Chicago, Ill., under Act of March 6, 1879.

Getting down under the hide

This Goodrich dealer has not only found that Goodrich Tires do make friends by superior service, but he is repairman enough to have also found out why.

"We have found from experience in repairing all makes that Goodrich is really 'Best in the Long Run.' We are now handling a complete line of Goodrich and our business has increased over 100% over last year."

PARSONS BROS.
TIRE COMPANY
Charleston, W. Va.

100% Goodrich!—
and we happen to know that he tried out a good many other makes before he came to that conclusion.

The B. F. GOODRICH RUBBER CO.
Akron, Ohio

Goodrich TIRES

"Best in the Long Run"





POOR MATERIALS RENDER POOR SERVICE

Like the cheap umbrella which goes to pieces, so too, the top on an open motor-car will become shabby and break through if made of an inferior grade of topping.

Unknown, cheap materials used for open car tops fail to stand up under the wear and tear of the elements. A good top is essential to a good open car and one must pay the price for quality.

Discriminating top makers and car manufacturers for over 27 years have used the guaranteed nationally known

CHASE
DREDNAUT
Motor
Topping

"DEFIES TIME AND THE ELEMENTS"

L. C. CHASE & COMPANY, Boston

DETROIT

SAN FRANCISCO

CHICAGO



The Vital Factors

In the Fine-Car Field

STUDEBAKER has reached top place in the building of quality cars. It has gained that place by leaps and bounds, and for reasons all should know.

Today our assets are \$90,000,000.
Our plant investment \$50,000,000.
Our output, 150,000 cars per year

Some reasons

First, the name Studebaker, honored for 72 years. For two generations, in city and country, it has stood for quality and class. In the motor car field we simply had to live up to it.

Second, ample resources to do what we had to do.

Third, an organization trained to Studebaker standards, bound to preserve our traditions.

Our advantages

Today we have these advantages:

The largest output in the fine-car field—150,000 cars per year. So engineering, overhead etc., amount to small sums per car.

A modern and efficient plant. We have spent \$38,000,000 on it in the past five years.

12,500 up-to-date machines, adapted to exactness, efficiency and economy.

A splendid engineering department, with 125 able men.
\$8,000,000 in drop forge plants, which render enormous economies.

\$10,000,000 in body plants. On some types of bodies we save you up to \$300 per car by building them ourselves.

Facilities for building complete cars without paying profits to middlemen.

Human factors

Our organization consists of 23,000 people. We do everything possible to keep and develop them.

We sell them stock on attractive terms to make them partners in the business. We pay annual dividends of wages to those who stay. After five years these dividends amount to 10 per cent of the wages.

Annual vacations with pay.
Pensions on retirement.

Bonuses to management when they excel expectations.

To give the best

Determination to give the best, regardless of the cost. We pay 15 per cent premium on some steels to get them exactly right. Real leather in our open models, Chase Mohair in closed models.

More Timken bearings than any other car, save a few.

Crankshafts machined on all surfaces, as in Liberty Aircraft Motors, at an extra cost of \$600,000 yearly. No other maker of cars at our prices does this.

Such are the vital factors in the fine-car field today. And they always will be.

Anyone interested as seller or buyer should consider how much they mean. No one who does that can ever doubt that Studebaker will continue to lead.

The Record

1919— 39,356 Studebaker cars.
1920— 51,474 Studebaker cars.
1921— 66,643 Studebaker cars.
1922— 110,269 Studebaker cars.
1923— 145,167 Studebaker cars.

Sales almost trebled in three years. Last year, fine-car buyers paid \$201,000,000 for Studebakers.

Business for 1924 has opened as never before.

LIGHT-SIX

5-Passenger 112-in. W.B. 40 H.P.	
Touring	\$1045
Roadster (3-Pass.)	1025
Coupe-Roadster (2-Pass.)	1195
Coupe (5-Pass.)	1395
Sedan	1485

SPECIAL-SIX

5-Passenger 119-in. W. B. 50 H. P.	
Touring	\$1425
Roadster (2-Pass.)	1400
Coupe (5-Pass.)	1895
Sedan	1985

BIG-SIX

7-Passenger 126-in. W.B. 60 H.P.	
Touring	\$1750
Speedster (5-Pass.)	1835
Coupe (5-Pass.)	2495
Sedan	2685

All prices f. o. b. factories.

THE STUDEBAKER CORPORATION OF AMERICA
South Bend, Ind.

THE WORLD'S LARGEST PRODUCER OF QUALITY AUTOMOBILES



Nash Leads the World in Motor Car Value

Delay in Changing is Costly

There are many good automobile merchants with other lines than Nash who are complaining about slow sales today.

They could be doing a brisk volume of business if they had heeded our advice and secured a Nash contract.

The longer you delay in reaching the decision to change to Nash the more it costs you in actual profits.

Why work a proposition with limited money-making possibilities any longer?

It is a known fact that Nash dealer profits are substantially above the average.

Why strive to co-operate with a factory policy that hinders instead of helping you?

The Nash sales policy is shaped entirely to the end and aim of building the dealer up instead of tearing him down.

Send that wire today asking for information about territory.

NASH

THE NASH MOTORS COMPANY
KENOSHA, WISCONSIN

Nash Leads the World in Motor Car Value



(2870)

GENUINE *Oldsmobile* SERVICE PARTS

**One
Price
Every-
where**

The following certified accessories, specially designed for perfect fit and quick installation on the Oldsmobile Six, can be procured from any Oldsmobile dealer in the U. S. at these net prices, complete with necessary attachments:

Front Bumper - -	\$15.00
Rear Standard Bumper	15.00
Rear Sport Bumper -	15.00
Radiator Cap, with Bars	2.50
Road Spot Light - -	5.00
Windshield Cleaner -	1.25
Rear View Mirror -	1.75
Trunk Rails (set of four)	6.80
Sport Tire Carrier -	7.50
Trunk Platform - -	7.00
Enameled Steel Trunk	25.00
Windshield Wings (pair)	17.00
Running Board Step	
Plates (pair) - - -	4.75

Oldsmobile dealers enjoy the help of the factory in getting *all* the Oldsmobile service business. We do not stop at merely selling our dealers service parts and trusting that they will get most of the local Oldsmobile service business. We go further. We advertise extensively that Oldsmobile service parts can be bought at the same price in Jacksonville, Fla., or Seattle, Washington.

We point out to buyers that it is to their interest to deal with the Oldsmobile dealer, because genuine Oldsmobile parts are sold by all Oldsmobile dealers at a standard price established by the factory without the addition of any war tax, handling, or transportation charges.

We also invite the public to examine the master parts price list issued by us to Oldsmobile dealers. This list is always open for owners' inspection, so that arguments about parts bills are eliminated.

In establishing this far-reaching and important service policy Oldsmobile again pioneers. This is just one more of the advantages which the Oldsmobile dealer enjoys. Be an Oldsmobile dealer.

OLDS MOTOR WORKS, LANSING, MICHIGAN
Olds Motor Works of Canada, Ltd., Oshawa, Ont.

OLDSMOBILE SIX

PRODUCT OF GENERAL MOTORS

"MAN!

*Connecting Rods Rebabbitted by Watkins
sure fit quick to the crankshaft"*



That boss of mine is sure keen on more profit from our repair and service work. He is long on the "flat rate" basis because it gets more customers. This means that we have got to keep down time on all jobs—BUT SAY BOY!—that boss of ours has got an eagle eye for quality. So we are mighty ready to listen to any story that will help us give him what he wants. He is "hot on the trail" of the kind of connections that will help him put over good work at the right prices and make more money in 1924.

Watkins Connecting Rod Rebabbitting Service sure helped US out. His first trial order sold him. When the boss saw how thoroughly Watkins rebuilds rods with new bearings, tinned in and broached to mirror-finish, and with laminated shims to make fitting easier, new bolts and nuts, and new bronze piston pin bushings in the upper end, all of S. A. E. Specification materials, he said—"Watkins gets all the old rods from now on." We get a perfect crankshaft fit with scarcely any of the old time scraping. And Watkins One Day Service gets the rods back promptly so that the overhaul jobs move right along without cars lying around in pieces taking up a lot of space while we

waited for the rods and made excuses to customers.

To sum it all up, we are making good money now because Watkins Rebabbitted Rods have perfect crankshaft fit—it's in the crankshaft fitting where money is made or lost in motor overhauling and doing it without hurting customers' feelings. We no longer hesitate to charge for actual time in fitting bearings because we know the charge is right. We used to absorb a lot of loss, some of it overtime, too, because the boss was too kind hearted to charge, but there is no more of that since we sent our rods to Watkins.

WATKINS

Complete REBABBITTING SERVICE

You, too, can make almost revolutionary savings in your motor overhauling by sending all the connecting rod work to the nearest Watkins Branch

HARTFORD, CONN., Ripley Motor Services.
INDIANAPOLIS, IND., Indiana Watkins Mfg. Co.
KINGSTON, ONT., Watkins Mfg. Co. of Canada, Ltd.
LOS ANGELES, CALIF., Miller & McIntyre.
MEMPHIS, TENN., J. B. Cook Auto Co.
NEW YORK, N. Y., Lake Sales Co.

OMAHA, NEBR., Interstate Machinery & Supply Co.
ST. LOUIS, MO., H. & H. Machine Co.
SYRACUSE, N. Y., Watkins Mfg. Co. of New York.
TOLEDO, OHIO, Stewart-Burgan Co.
WASHINGTON, D. C., R-L Motive Parts, Inc.
WATERLOO, IA., All States Rebabbitting Service.

The Watkins Mfg. Co., Home Office Wichita, Kans.

MOTOR AGE

Good Merchants Not Ready Made

The Small Dealers in the Automotive Field Are the Material From Which Conspicuous Successes Will Be Developed Through Processes of Education and Experience—How Some Distributors View the Outlook

This is the second article based on a discussion of the essential business qualifications of the small automotive dealer by distributors in letters to MOTOR AGE. The first article was published in the issue of Feb. 14. Another will appear in an early issue.

By SAM SHELTON

HOW is it possible for the automobile dealer today to climb up the business ladder to conspicuous success, to establish himself as a capable business man, to win the confidence and respect of his banker, to achieve the independence that will enable him to stand on an equal footing with the men whose merchandise he sells?

It is being done right along. In all sections of the country are keen merchants making money and banking handsome profits from their enterprise in the automotive industry.

But there goes up the cry that far too many who embark in this particular line of retail selling fall beneath the burden of costs that exceed profits. In an article in the Feb. 14 issue of MOTOR AGE we presented the views of some leading distributors, each one of whom was responsible for the sale of automobiles over a wide territory and who had proved notably successful in their respective fields.

Distributors whose letters were quoted in that article were practically agreed that men who expect to succeed as automobile dealers should possess outstanding business capacity based upon high standing mentally, morally and financially in their communities. It was asserted it was these attributes which give a man the foundation to be successful in a business enterprise. It was the verdict that good merchants



possessing these qualities are wanted in the automotive industry.

But what about the other factors? What about the responsibility of the distributor and the manufacturer? Is the capable man with high standing in his community assured of as fair an opportunity to succeed in the automotive business as he would be in another retail business? It is a car dealer himself who raises the question, and in doing so he does not forget that selling automobiles is a merchandising proposition involving the ability to buy right, keep accurate accounts, make good on promises, know costs and discount bills.

Charles H. Emmons Comments

Stirred by the discussion in the preceding article this dealer, Charles H. Emmons of Ashtabula, Ohio, writes as follows:

"Your contributors have confused cause with effect. If any distributor of a standard make car is unable to find a strong dealer organization it is his own fault. Poor dealers, like the used car problem, are the result of poor merchandising; they are not the cause of anything. To start with, too many distributors think that a dealer is just a goat to unload their surplus cars on. They overstock him in the winter and understock him in the spring and summer. In the winter they have cars to get rid of and are glad to wholesale them. In the summer they need them for their own retail department. They are too timid to order enough cars, consequently when the big selling season is on they are short of cars—and rob the dealer.

"If you will show me how a dealer can make money under those conditions I will take off my bonnet to you.

"To begin with, no dealer should be asked to do business on less than 25 per cent discount. It is an impossibility to stock cars from November to March and carry part of them until May, stand

the expense of storing, insurance, interest and depreciation, such as an occasional jammed fender, torn top, dead battery, bad tire, etc., which is bound to happen, and have any money left on 18 to 20 per cent discount. These distributors get low grade or inexperienced dealers because a high grade experienced dealer will not even listen to their proposition. In other words, 'sucker money' is getting scarce in the automobile business.

Answer Here Is Easy

"In the case of the high priced car the answer is easy. There are not enough people in a small town who can buy the car to make an agency profitable except as a side line to a dealer who has a popular priced car.

"As to moral standards, I doubt very much if there is a town in the United States where men of good moral character cannot be found to handle a business if there is money in it.

"You will notice that there is one distributor who has 100 good dealers, all making money. And he will have them just as long as they are making money and no longer.

"It is also necessary for the distributor to be a good business man, of good moral standards. He must be good enough to know that a dealer cannot exist on no net profit, and he must have moral character enough to see that the dealer gets a square deal. Good dealers will flock to the standard of the good distributor.

"The distributor makes or is supposed to make a profit on his wholesale business. He must expect to render some service for this profit. It is up to him to see that there are cars available for his dealers when they want them—not two or three months before they want them or a month after they want them, because there is no profit for the sub-dealer in a car he has to carry too long or in an order he cannot fill. It is good business to winter stock a reasonable

number of cars if the discount will allow it. But it is better to lose business than to stock cars at a loss."

And so this dealer does what many other dealers would like to do—calls the attention of distributor and manufacturer to their own responsibility in the making of good automotive merchants. But this responsibility is highly appreciated by some of the leading distributors. Witness the Southwest Nash Company of St. Louis. In a detailed statement which is printed hereafter this company flat-footedly declares that much of the trouble with automobile dealers is due "to indiscriminate and unethical policies pursued by both manufacturers and distributors in creating their dealer organizations."

Southwest Nash Analysis

Here is the Southwest Nash Company's analysis of the situation in which it discusses the future of the automotive industry:

"Quoting from one of our truly great automobile manufacturers, 'The time of the survival of the fittest is here.' Each succeeding year bears out this statement stronger than ever and though much can be said regarding financial stability and standardization of products as contributing directly or indirectly to the manufacturers' chances of survival, the underlying factor that will ultimately determine the individual strength of manufacturers is their disposition to build for permanency. This holds true not alone in the stabilization of their own organizations but in the conservation of their dealers who in reality represent the bulwark of their existence.

"Statisticians tell us that over 50 per cent of all cars manufactured are sold in rural communities through the medium of dealers in small towns, yet with very few exceptions 90 per cent of the dealers are today existing from hand to mouth, with the rate of mortality steadily increasing. This situation is in a



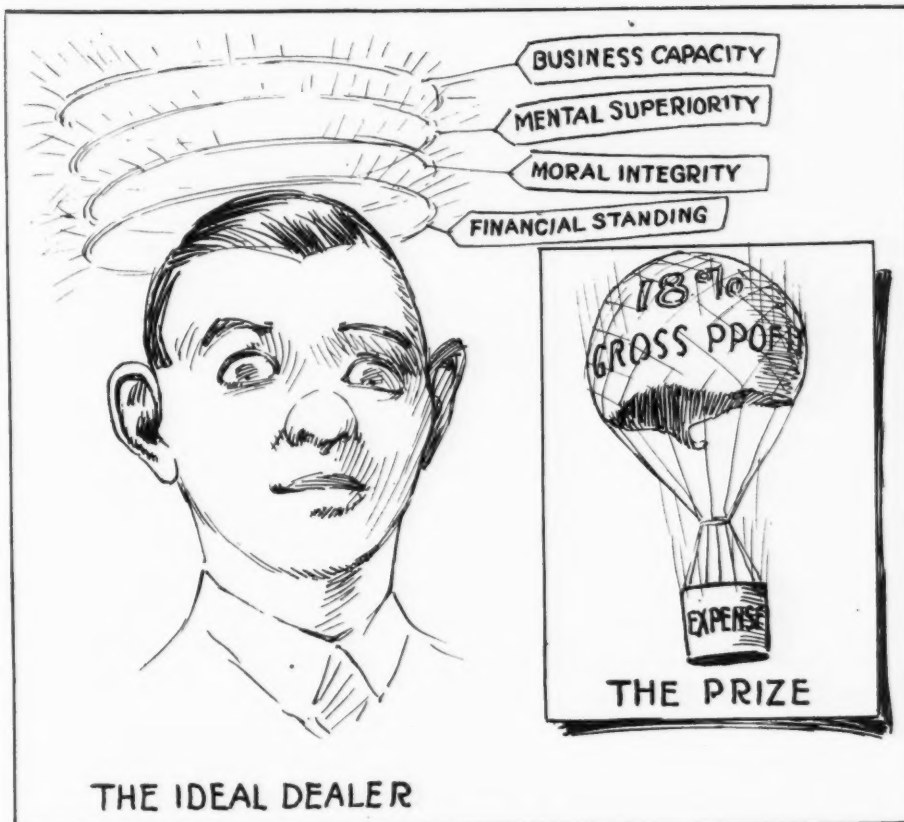
large measure due to the indiscriminate and unethical policies pursued both by manufacturers and distributors in creating their dealer organizations. Dealers who have little or no excuse for their existence are awarded contracts simply by reason of some salesman's eagerness to secure some immediate business with no thought to the permanency of the connection.

"The average dealer in the small town by virtue of many reasons is unprepared to successfully operate a business as complex as the automobile business, and a critical survey of the country dealers would tend to show that the vast majority lack the essential qualifications to properly conduct an agency. True, some of the larger manufacturers have attempted through the medium of sales manuals to instruct dealers in efficient methods of operation, but have laid too much stress on selling, in all probability because their tremendous production necessitated increased effort on the part of dealers to secure a greater volume of sales. Little or no effort has been made to assist the dealer to increase his earning capacity through scientific management except perhaps in a general way, but no concrete rules have been laid down for his edification.

Concentrated Effort Needed

"There is a pressing necessity for concentrated effort on the part of both manufacturers and distributors to educate the small dealer in the fundamental principles of management and proper control of his affairs if the integrity of the industry is to be preserved. As it stands today the situation is simply this: Dealers do not command the confidence of bankers and are treated with contempt by the average citizen. The reason is obvious. Many dealers even boast of the numerous lines of cars they have handled in past years, little realizing that this policy of diversification has been largely the cause of their downfall whether directly responsible or not. This has had a demoralizing effect upon the public for the very good reason they receive no definite assurance that the service they were so profusely guaranteed would be forthcoming. As a consequence they have classed the automobile dealer with aspiring politicians who promise much but deliver little. How very few of the small dealers can show a substantial net profit in relation to invested funds? It is a safe conjecture that many of them are unable to tell whether they are making money at all.

"In their mad rush for volume, distributors and manufacturers have forced the small dealer to accept and pay for cars under penalty of cancellation, disregarding all principles of good business and without consideration of his working capital or his ability to dispose of the load profitably. Wild trading has been the natural outcome and as a result the public force dealers to bid for their old cars which go to the highest bidder. Substantial growth and stability cannot come out of this deplorable condition unless manufacturers and distributors



organize to stop this practice which is tearing down the very foundation of the industry. It cannot be ignored much longer and intelligent steps must be taken to reestablish the dealers on a higher plane so that they may take their rightful place among other business men in their respective communities and command the respect they once enjoyed.

"Not until some tangible method is adopted to materially assist dealers to build up their organizations and earn substantial profits can outside capital be attracted and new blood infused into the business. If permanency is a factor in the future success of the industry and the present dealer organization all we have to rely upon, then let's build up that organization wisely and judiciously so that in course of time other types of business men with capital who are so sorely needed in the business at present will naturally be attracted to it by its money-making possibilities. At present they are afraid to venture into the automobile business on account of the bad precedent already set. From the outsiders' point of view, the 'game' as they call it is a gamble and a losing proposition in every respect.

"Consideration, co-operation and a genuine interest in the dealer's welfare is the only solution to the problem manufacturers and distributors must inevitably face."

This is frank and free discussion of matters of interest to every automotive merchant. The writer recognizes that the dealer organization is the bulwark of the manufacturer's existence. Yet he finds both manufacturers and distributors establishing dealerships without giving proper consideration to the various fac-

tors that are to determine whether or not the dealership will prove a permanent and profitable business. It must prove profitable to be permanent. And if it is not permanent it will have an adverse effect upon the fortunes of the manufacturer.

Some Dealers Lack Qualifications

Admitting as asserted by this writer that a great many dealers are appointed in small communities (and large ones, too) who lack many desirable business qualifications, the question remains: What can these men do now that they are in the automotive business to increase their capability and probably turn out to be successful merchants?

For the man who is blind to all progress, who will not read and study, who refuses to learn from the experience of others, there is no hope. On the other hand the man who may have gotten into the business without proper qualification but who possesses intelligence, initiative, adaptability, determination, character and sound education has a 100 per cent opportunity to make good, to learn the things he doesn't know, and establish himself as a business man of ability and integrity.

We prefer to believe that the great majority of dealers are of the latter type; that they measure up to the mental, moral and business standards of any other industry and that what they lack they are slowly and surely learning.

From Guido Abbott, president of Abbott Motors, Inc., of New Orleans, we have another letter touching upon these very points. Mr. Guido writes:

"Unquestionably MOTOR AGE is doing a great work in educating automotive



Why Don't They Help Him Fix It?

dealers both large and small in this country in better merchandising methods. It is patent, of course, that unless the dealer reads and studies your articles, he cannot hope to benefit by them. Our territory man has instructions to urge our dealers to avail themselves of the opportunity offered in your various periodicals for improvement in their business methods.

"It seems to me that the thing which is most needed in this business is to have the dealer realize that he is in this business for the purpose of making money. What we need in the automobile business is better merchants, both large and small. A part of the trouble starts with the manufacturer. He needs a little educating, too, because under present conditions many manufacturers establish

dealerships and distributorships without regard to the business ability of the contracting parties, and make recommendations to them which, if followed, mean disaster. Every weak dealer that is established is a detriment to the industry as a whole.

"We have heard so much in the last few years about volume that other questions of just as vital importance have been overshadowed. I believe that turnover is more important than volume, and believe that among thinking automotive merchants turnover and overhead today hold the center of the stage."

Wouldn't it be fine if the automobile manufacturer or distributor could place an order for 25 or 50 or 100 ready-made successful merchants and be sure of getting them? Things aren't done that way.

Successful doctors and lawyers don't come ready-made in spite of the great schools that are constantly turning out the raw material from which successful men in these professions are developed. In the merchandising field we find the same thing. Ambitious men are constantly embarking upon new enterprises, some with fair chances for success and some with the certainty of failure lurking ahead.

This is the condition in practically all lines of retailing. Many enter but few succeed. Those who succeed rise to the top through a slow process of education, learning by the experiences of others and applying to their own business the fruits of knowledge acquired by others perhaps through generations of business endeavor.

Dealers Eager to Succeed

There is no doubt that the great majority of automobile dealers, small and large, are intelligent, ambitious and eager to succeed. Some who today are insignificant and perhaps unnoticed will in a decade be shining successes. They are the ones who in their days of apprenticeship will have stored away knowledge from the experiences of themselves and others and profited thereby. They are the ones who with keen intelligence and foresight will have taken advantage of the many avenues of helpfulness opened up to them by manufacturers, distributors, associations, business papers, books and contact with the public and their fellow merchants.

The small dealer need not be satisfied with remaining small. If he has the right stuff in him he can make himself grow until the choice will be his as to what lines of automotive merchandise he will sell and service.

(In another article we will take up in some detail specific suggestions made by successful distributors as to means by which the small dealer may improve his business standing and add to his profits. This article will appear in an early issue.)

What Is the Cost of Automotive Buildings?

HERE is a picture of the new building of Llewellyn & Scott at Sterling, Ill., just completed at a cost of something over \$50,000.

It is 90 ft. by 142 ft. in size and has the office and salesroom located between the entrances with battery shop at one side and women's rest room at the other.

The cost of this building may be of interest to prospective builders being an average type of building built in an average size town. Figured on the cubic foot basis its cost is between 19 and 20 cents. On this basis a man wishing to put up a building of this type can multiply the length by the width and by the mean height to get the cubic contents and then multiply the result by 20 cents to get the approximate cost.



Perry Condenser Prevents Loss of Water in Cooling System

ONE of the recent developments in the automotive industries tending towards making the maintenance and operation of motor vehicles easier and better has evidenced itself in the Perry condenser, a device which aside from its simplicity has many features to recommend it.

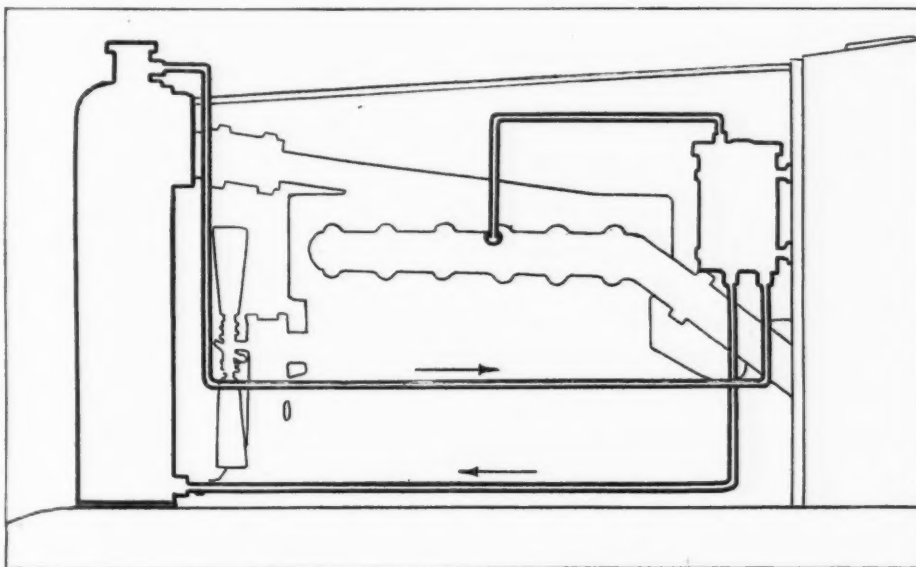
It is essentially a device which makes it possible to have the cooling system function over very long periods without the necessity of having to add water, or in the case of cold weather, anti-freeze solution. In the latter case, it is stated that there is assurance at all times that the alcohol content, for instance, of the cooling water will remain constant, assuming, of course, that there are no leaks in the cooling system.

It is further stated that the condenser makes possible running the engine at a much higher temperature, because any water which might be evaporated is put back into the system.

The illustrations show the general methods used in installing the device and also a sectional view of the tank, which in some respects resembles a vacuum tank. The Perry condenser comprises an inner and outer tank, the former having a cork float inside of it and this float is connected by a lever to a valve which opens alternately to the pressure line from the combustion chamber or exhaust and to the atmosphere. When the float is in its lowest position the valve is open to the atmosphere and in normal operation the float is in this position.

There is a small flapper valve in the bottom of the inner tank and in the bottom of the outer tank is a coil of tubing perforated with a number of small holes. The central pipe which also acts as a guide for the float communicates with the cylinder block water jacket or with the radiator inlet pipe. The overflow pipe from the radiator is connected to the pipe or tube in the bottom of the outside tank. There is also a vent pipe communicating with the outside tank to the atmosphere.

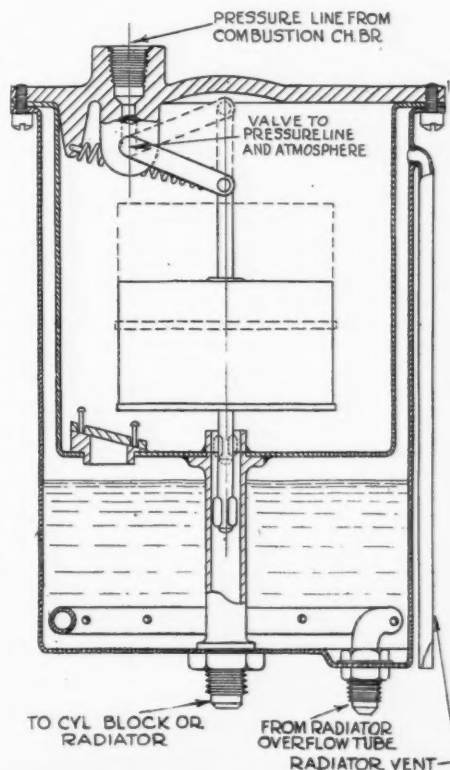
The action of the Perry condenser is as follows: The water system is filled in the usual manner, and some of the water runs into the overflow pipe partially filling the lower portion of the outer tank. Now in case of steaming or boil-



Installation diagram of the Perry condenser. The tank may be placed anywhere desired, since the water is returned to the system under pressure

ing the steam coming from the overflow pipe naturally is condensed in the water of the outer tank and eventually the level of the water in the lower tank rises.

The rising water passes through the flapper valve of the upper tank and naturally as the water rises in the upper tank the float also rises. The air in the upper tank is displaced through the atmosphere valve by the rising water, but at a certain point the atmosphere valve is closed and the pressure line opened. The result is that the water is forced by pressure through the central tube and eventually into the radiator or cylinder block water jacket. As the level of the upper tank lowers the pressure line is closed and the atmosphere valve again opens. The outside tank is equipped with a vent tube so that in case of extreme cases of steaming or agitation of the water, it will pass out of the system through this vent. This will only take place in severe cases, because in all ordinary cases of overheating the tank will function without loss of water. The apparatus has been brought out and patented by F. R. Perry, 1720 Prairie Ave., Chicago.



Chevrolet Golf Award

If there is any golfer in Portland, Ore., who is not shortly familiar with the Chevrolet automobile and with the Fields Motor Car Co., local distributor, it will be through no fault of the local Chevrolet organization.

A unique golf contest, sponsored jointly by the Chevrolet organization and the park bureau of the city of Portland, was

announced recently, with a brand new Chevrolet touring car as the prize. The car will be donated by the Fields Motor Car Co. and the contest will be known as the Fields Chevrolet Golf tournament.

Under the arrangements the contest will be open to all members of the two large municipal golf clubs of Portland. These clubs are open to all residents of the city upon payment of a membership fee of \$1.00 a year. A committee of officials from the two clubs will handle the

details of the tournament. In order that golf "sharks" will not kill the contest by scaring away the great host of average amateurs, a ruling has been established that the contest is open only to those who make net scores of 80 or higher. The tournament will also be closed to those under 18 years of age and to those who do not drive automobiles. It will be a handicap affair and it is expected approximately 1000 golf players will participate.

The Westinghouse Type BT Ammeter

The Magneto Effect of the Electric Current Is Used in a Novel Way

THE Westinghouse Electric and Manufacturing Co. is in production on an ammeter of unusual design known as type BT. This meter by reason of its novel construction needs no connections and has no terminals, the only connection being a magnetic one. All that is necessary in installing one of these meters is to run the wire from starting switch to generator, through an iron loop at the back of the meter, and the magnetic action of the current flowing does the rest.

As this meter competes in a field where price is a factor it might be of interest to compare its construction with that of the conventional meter made to sell at a low price. The typical meter made on the soft iron principle is shown in Fig. 1 where the diamond shaped piece of iron is pivoted between the poles of a horse-shoe magnet and held in position by the effect of the magnetic lines of force. The needle mounted on the iron diamond is accordingly held at the zero point on the scale.

The coil of the instrument is wound on another piece of soft iron located at right angles to the normal no current position of the soft iron diamond, and when current flows in the coil, this piece of soft iron assumes a certain magnetic polarity. For example if the current should be such as to cause the lower end of the soft iron piece to become a north pole we would have the effect of two north poles, one of the permanent magnet and the other of the electro magnet. The average location of this composite north pole would then be up and to the left so that the soft iron diamond shaped piece would be held out of its central position and the needle would be deflected to the right.

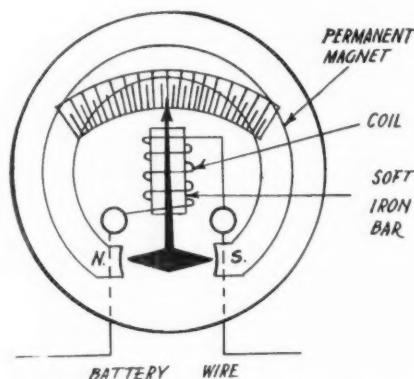


Fig. 1—Typical soft iron type ammeter used on average motor car

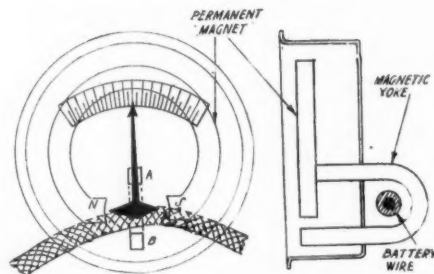


Fig. 2—General principles of the Westinghouse Type BT ammeter which requires no connections

With current through the coil in the other direction the action would be reversed and the needle would be deflected to the left.

Meters of this type were subject to being burned out by a heavy current as would be produced by a short circuit in the wiring, this also being true of most ammeters, even those selling at a greater

price. In this type meter also the iron core in the coil would retain a slight amount of magnetism and if a short circuit current flowed through the coil, the amount of residual magnetism was increased. The effect was to cause the needle to be thrown off zero in the no current position in case a heavy current was accidentally allowed to flow through the meter.

Principles of the BT Meter

In Fig. 2 is illustrated the general principle employed in the Westinghouse BT ammeter, the operation of this instrument being based on the fact that a wire carrying an electric current has magnetic lines of force around it. These lines of force are made use of and caused to produce a strong condition of magnetism in a soft piece of iron shaped like a hair pin. The right sketch of Fig. 2 illustrates this construction and shows how current in the wire in sending lines of force through the curved portion of the hair pin will make magnetic poles of its tips.

Referring now to the left sketch of Fig. 2 we can easily see how the combined magnetic effect of a permanent magnet and the variable electro-magnet will operate the soft iron piece which carries the needle much in the same manner as in the old type soft iron ammeter. The effect of short circuits however is said to be negligible due to the use of a special grade of iron which retains practically no residual magnetism, while the fact that the wire through the loop can be burned up by a short circuit without affecting the internal portions of the meter indicates that it is a device practically indestructible under ordinary conditions.

Beach Carbureter

A carbureter of the variable venturi or constant vacuum type has been placed on the market recently by the Beach Converter Corp., Belleville, N. J. It has a wood float located in a float chamber concentric with the mixing chamber and makes use of a float valve consisting of a ball of Tobin bronze.

The structural part of the carbureter comprises two aluminum castings, one forming the float chamber and the lower part of the air passage, the other the float chamber cover and the throttle chamber. The instrument is made in both horizontal and vertical outlet types, and so far has been sold for replacement purposes exclusively. The air inlet at the bottom of the float chamber forms an L and contains a choke valve to facilitate starting.

Gasoline enters at an L fitting secured to the throttle chamber above the float chamber and passes down through a nipple at the bottom of which there is a

seat for a ball valve. This valve is actuated from the wooden float directly through a short valve holder bearing against a metal insert in the top of the float. The float is hinged to the float chamber on the opposite side, and the comparatively large distance between the hinge axis and the valve holder axis is a factor in reducing the friction between float and valve holder in making the valve very sensitive to changes in fuel level.

The use of a ball valve at this point is claimed to overcome difficulty in preventing leakage of fuel. Owing to the spherical form of the valve and its seat it is not necessary that the valve holder axis should coincide with the valve seat axis. The wood used for the float is a special Southern hardwood known as tupelo and is rendered impervious to the fuel and to any water.

The venturi air passage is formed by giving the part serving as spray nozzle an inverted truncated form. The spray nozzle opening is adjustable by means of

a conical valve extending through the top of the carbureter. After leaving the metering orifice the fuel flows through radial passages until it meets the stream of air coming up from below at the most constricted part of the air passage. The outer surface of the venturi is formed by a floating sleeve with an inward flange run out to a sharp edge at its upper end.

At starting the sleeve rests on a ledge within the carbureter body and the cross sectional area of the air passage at the delivery openings of the spray nozzle is very small. As the engine speed and the throttle opening increases, however, the sleeve is raised by the increased suction and the depression at the section where air and fuel mix remains nearly constant. Constancy of suction naturally makes for constancy of mixture proportion. The fact that where the fuel and air mix their directions of flow are substantially at right angles to each other tends to produce effective atomization and a thorough intermingling of the two.

Some Letters to the Editor

This Writer Doesn't Like the Left Hand Drive

To the Editor of MOTOR AGE:

Come to think of it (no one else seems to), who started the left hand drive anyway?

Years ago,—some manufacturer came out with a new "style," the steering wheel on the left side. The chief reason, as I remember it, was "to let the passenger out without getting his feet muddy." Not to be outdone by this particular manufacturer, the rest tagged along like a flock of sheep. So today we have practically all "left-handers," no car maker starting anything different, but all worrying about what the other fellow will spring next.

But how many who have ever driven a right hand drive, prefer the left? They are mighty few and far between. In the first place suppose, on a right hand drive, your passenger does have to get out on the wrong side occasionally. For every time the passenger does, you yourself, walk around the car ten times. Isn't the owner of the car worth a little consideration?

Secondly, the right drive causes far less fatigue at the end of a long drive. This is because whenever a road is crowded, even slightly, as practically all roads are, the driver's body rests against the side of the car in a comfortable position. In a left hand drive, his muscles are cramped from continually bracing himself from sliding or tilting toward the opposite seat. On some roads it is next to impossible to keep his body behind the steering wheel.

A Very Important Point

Third,—and a very important point, is that on the right hand drive, you can see exactly how close you are to the edge of the ditch or curb. No guess work. No crowding the approaching car on the dark highway. No dropping into the ditch yourself. No feeling your tire walls against the curb and no tickets handed you for not getting up close enough.

All that can be said for the left hand drive are two very small and doubtful advantages. One is, in case you are carrying a passenger, he won't get his feet wet (but you will,—many times). Another, that in passing a car going in the same direction, on a right hand drive it is necessary to drop back a few feet further to see if the road is clear. But this is generally eliminated by looking through the rear window of the car ahead. As for shifting gears, this is just exactly as easy with the left hand as with the right, after you try it a few times. And it leaves your right hand on the steering wheel.

All in all, the advantages are about six to one in favor of the right hand drive. So why do manufacturers persist in building the left? Just because "the rest are doing it?" The left hand drive is an imported idea,—in Europe they drive on the left side of the road.

It would certainly seem that among our progressive manufacturers, there were at least a few who could break away from convention, and give the public added convenience. Especially when there is no extra cost attached to it. Let's hear what you have to say about it!

Cordially yours,

Chicago, Ill.

F. H. ARISMAN.

Emmons Sees Better Days Ahead for the Automotive Business

To the Editor of MOTOR AGE:

I know of no better way to start this letter than to quote Mr. W. C. Southwick of the Foster Auto Company of Guthrie Center, Iowa, who says: "When the manufacturers quit forcing

cars on dealers whose spines are too weak to refuse them, prosperity will return to small town dealerships but not before."

I have always said that used cars were not the cause of any of the dealers' troubles but were the result of poor merchandising. The direct cause of "the used car problem" is—too many dealers—and—too many cars per dealer. For instance, there are at least ten dealers selling one low priced car in Cleveland and more than that selling a competing line—and every mother's son of them trying to sell all the cars in Cleveland. All a buyer needs to do there to unload his tinware at top price is to make the rounds and take the best price offered. He sure has a fine list of prospects. The manager of a used car department in one of those places has about as much chance as a canary bird at a cat's picnic. As soon as he starts to appraise cars at their real value, he shows retail sales down to the point where the management is on his neck. If he pays a price which enables his retail sales department to get their "volume" every car shows a loss and his department is the goat.

Same Conditions in Small Towns

The same conditions exists in the small towns only more so. The new car buyer is better acquainted. Dealers are no longer protected as to territory and all the buyer or rather seller has to do is shop from one small town to the other. This thing is worse in the winter and early spring because dealers are overloaded with cars that have been "allotted" to them, in most cases on floor plan notes, and they must get rid of these cars whether they make money or not—mostly not. That is the cause of the "used car problem." You don't hear much about "a used car problem" in June and July. In those two months dealers are actually making money and then in August when the late summer slump comes the whole thing starts over again.

The whole thing sounds silly and it is silly. It is hard to believe that so many suckers could be rounded up in one business. BUT—listen to me, sucker money is getting scarcer every year in the automobile business.

I understand that two manufacturers are planning to make more cars in 1924 than all the factories combined in 1923. More "used car problem," more bankrupt dealers. The result of this will be that dealers will be unable to take their "quotas" because they can't buy what they can't pay for and the cars will back up on the distributors and factory branches, then they can't take their quotas and then—crepe on the factory door.

Stop While Stopping's Good

That is—unless the leaders see the hand-writing on the wall and stop while there is yet time.

If a dealer could go out in his territory and tell the people, "Here, my factory is tuned up to so many cars a day and to enable them to keep up to schedule YOU and YOU and YOU must take a car apiece today and YOU and YOU must take one tomorrow, this scheme would work, but as long as he can't it won't.

If the manufacturer would "about face" and instead of tuning up the factory to so many cars a day and running them down the dealer's throat, they would make a survey of the dealer's territory, taking into consideration general business conditions, employment, financial condition of farmers, etc.,—and then make their schedule of production, allowing a fair margin for safety, this whole thing would be avoided.

But I suppose that is too good to be true. However, there are better days ahead. I will write about them in another letter if you want another.

CHAS. H. EMMONS.

Craig-Baker's Closed Car Show Interesting

Denver Dodge Dealer "Puts Over" Closed Car Sales Stunt With Splendid Results

CLOSED car sales received a noteworthy push by Craig-Baker, Inc., Denver Dodge dealers, when that company went in for a closed car show of their own in December. It was the third annual event of this nature and was a bigger success than any of the previous ones.

While this was an out-and-out show event, with entertainment and social features, and the firm maintained a set custom not to solicit any business at the show, there were five sales of closed cars to voluntary purchasers among the 10,000 visitors.

About 600 persons also handed in their names as prospective buyers. Besides, the show has tended to create a lively interest throughout Denver's "Automotive Row," and the firm that has established this yearly winter event has received an abundance of congratulations from fellow dealers.

Truck Users Exhibit Feature

In addition to the closed car show itself, with its Christmas season decorations, music, dancing, refreshments and educational moving picture films, an entirely new feature was added in the form of a room of exhibit booths arranged by 31 firms using Dodge or Graham trucks. This feature not only made a decided hit with the truck owners thus privileged to exhibit their various lines of merchandise or service to the show visitors, but also added to the all-around big automotive show appearance of this one-dealer enterprise and proved pleasing to the visitors.

To stimulate extra pride and a spirit of rivalry among the exhibiting truck users, for the benefit of everybody concerned, Craig-Baker offered a handsome silver

loving cup for the most attractive booth. Three other leading automotive dealers served as judges and awarded the cup to the Schilling Bakery Co., whose booth displayed a Christmas fruit cake and other especially seasonable palate-pleasers.

The motion pictures showed a modern, motorized sheep ranch in the Colorado Rockies, near timberline, and also Dodge cars and trucks in severe service in the Louisiana oil fields, this film being entitled "Endurance."

Entertainment for Everyone

Other entertainment features were orchestra music, supplemented by a Victrola that constituted part of the booth of the Knight-Campbell Music Co., one of the truck-owning firms participating in the show. There was also a dance as closing feature of the program Saturday night.

Five thousand invitations were mailed to a select list, and the general public was invited, also, through attractive newspaper advertisements. The mailed invitations were printed on the front page of the Dodge Diary, a Craig-Baker monthly house publication; and the artistic engraving that carried the invitation was then used in newspaper advertisements.

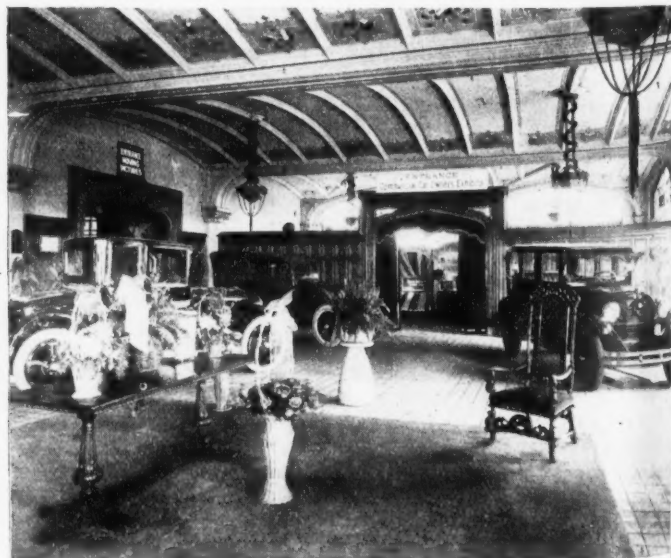
The inside pages of the Dodge Diary were given over to Christmas gift suggestions and lively sidelights related to the show, while the entire back page was devoted to a memorial in honor of the late John L. Craig, senior member of the firm, who died recently following an appendicitis operation. The gift suggestions were emphasized in a practical way by an elaborate display of accessories amid Christmas decorations.

Although there was a heavy snowstorm all day and night on Saturday, with blizzard "trimmings" considerable of the time from a speedy wind, the attendance held up surprisingly well. In one way, in fact, the weather provided a perfect setting for interest in closed cars and winter accessories, and many of the visitors came in closed cars, while others pictured themselves enjoying closed-car comforts in the near future.

From the standpoint of attendance, interest and in all important respects, the event was a gratifying success, according to Vice-President James A. Baker of the firm. As in former years, the show was announced over a wide area by means of a captive balloon, which was anchored at a height of about 1500 feet, and which was illuminated at night.

ATLANTA OUTLOOK GOOD

ATLANTA, Ga., March 6.—A much larger stock of spring merchandise will be carried by the dealers here this season than at any time since the inflation period immediately following the war, with a majority of the larger dealers confident that spring sales this year will be as large as they have ever been in the history of the automotive industry in Atlanta. The recent Southern show in Atlanta created a considerable interest, and while much larger sales than any previous shows were reported, the important feature was the number of new prospects secured, many of whom will buy cars this spring. Concentrating their attention largely on these new prospects dealers are looking for a big volume of business between now and summer, and in many instances are ex-



At the left: Some of the thirty-one exhibit booths arranged by truck users at the Craig-Baker Dodge Closed Car Show. The Schilling Bakery booth, in the foreground, won the silver cup presented by Craig-Baker, Inc. At the right: General view of Closed Car exhibit

Parts Replacement Simplifies Ford Service

*Standardization Upon One Model Beneficial to Both Dealer and Customer.
Parts Department Should Display Parts; Not Merely Store Them*

By B. M. IKERT

CONCENTRATION upon one design and construction has made it easy to service the Ford car.

There is no fundamental difference, mechanically speaking, between the Ford car of today and the car turned out by the factory in 1909, which marks the year of introduction of the now famous Model T.

There has been a refinement of units and parts, but the refinement has brought with it changes which do not affect the general design of the car.

Except for such changes as the size and shape of the radiator, hood and similar items which have to do principally with the appearance of the car, most of the changes have been accomplished without interfering with established dimensions.

Radius Rod as Example

As an example we cite the front axle radius rod. The radius rod was changed in 1919 as to the manner of mounting it to the front axle. In the previous design the ends of the rod were threaded and passed through the spring perches, being retained in that position by hexagonal nuts. The radius rod introduced

This is the second of a number of articles on Ford service, others of which will appear in forthcoming issues of MOTOR AGE. The first article on the "The Field of Ford Service" appeared in the Feb. 28 issue. Following articles will be on these subjects:

Selling and Installing Accessories for Fords.

Specialized Service Work for Fords.

Servicing the Ford Power Plant.

Servicing the Ford Chassis.

Flat Rates for Fords (three articles).

The Well Equipped Ford Shop.

The next article will appear in the issue of March 27.

in 1919 is made with an eye at each end to slip over the shank of the spring perch where it protrudes through the axle I-beam. One nut at each end of the radius rod holds both the spring perch and radius rod in place, whereas formerly there were two.

The point is that while the change in design of the radius rod made for simplification in assembly, it did not affect the dimensions of the parts involved

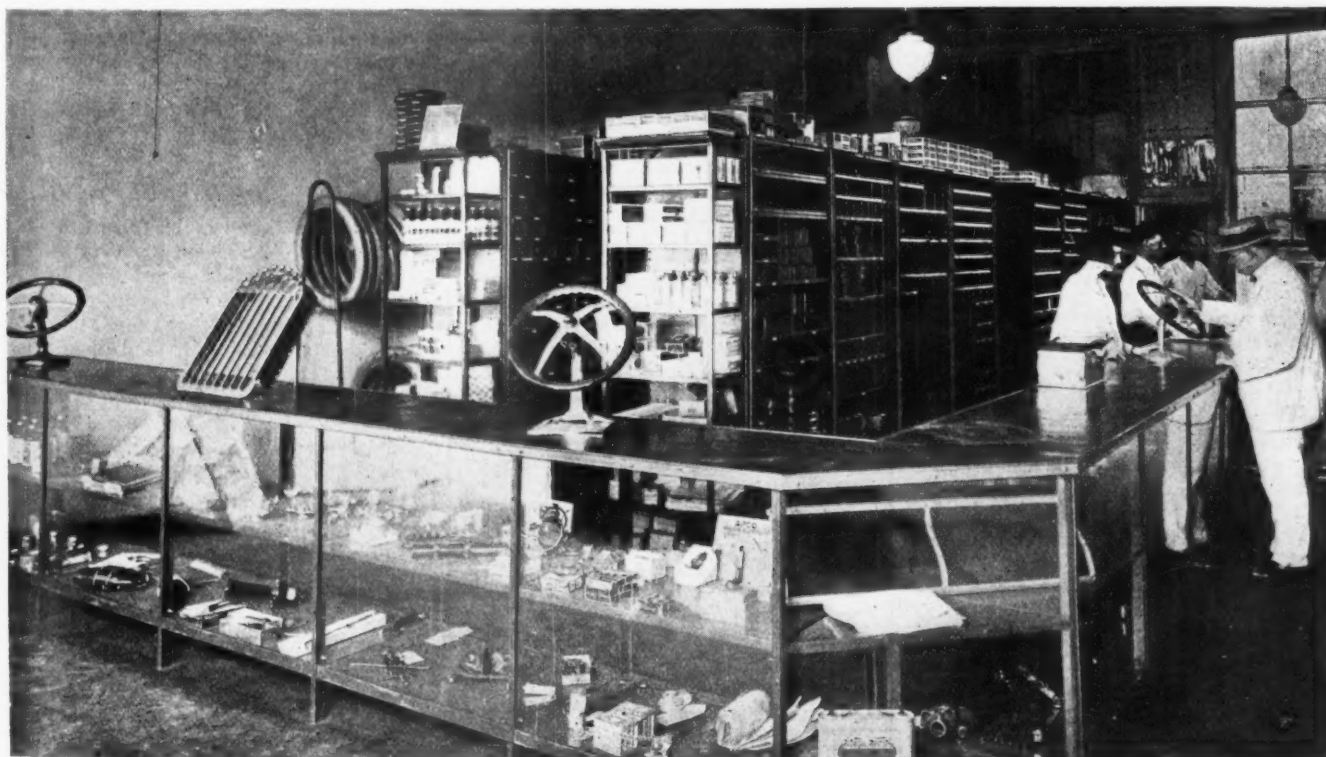
so far as interchangeability is concerned. This means that any Ford car prior to 1919 can be equipped with the new style radius rod, providing, of course, the spring perches also are changed.

Bringing Old Models Up to Date

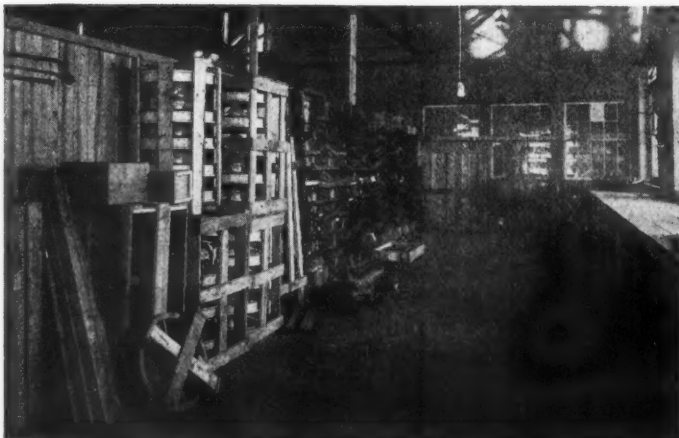
Practically speaking, it is possible to take one of the model T cars produced in 1909 and make in it the changes which have been carried out from time to time, thereby making the car what might be termed a 1924 model. The wheelbase of the Ford never has been changed since the inception of the Model T in 1909. Take a Ford frame of today and superimpose it on a frame of 1909 and you will find no difference. There may be a slight difference in details affecting manufacturing, but basically the frames are exactly the same.

The same holds true of the rear axle, front axle, wheels, gasoline tank, engine, springs, fan, running boards and numerous other items.

The adherence to one model naturally has its effect on the servicing of such a model. It greatly simplifies the maintenance man's problem and is far more profitable from the dealer's standpoint. For one thing it means that parts do not



A good example of attractively and efficiently displaying Ford parts and accessories. Note the display racks at the ends of the parts display cabinets



Although cleanliness prevails in this service station, the manner of keeping the parts is not generally to be recommended. The parts do not look well when kept in their crates. The wood bins, at the right, take up too much room for the amount of stock

become obsolete on the shelves of dealers and service stations as they often do when a car maker makes drastic changes in his models and the dealer is caught with a large stock of parts for the older model.

Turn-Over of Parts Rapid

The turn-over in Ford parts is rapid with most dealers and service stations and the changing of a part does not affect them as much as it does dealers of other makes, because of the great number of Fords in service, which still require maintenance and on which parts that have been altered on the later models still are adaptable.

Another factor involved in the concentration upon one model is that of service and repair equipment. In servicing one make and model car it is possible to lay out a shop to get the work more or less upon a production basis, the establishment of flat rates is possible and the whole job of selling and servicing can be handled more efficiently.

Service equipment and tools do not become obsolete when a car is not changed structurally; a big item, especially with the smaller dealer or service station who of necessity must use considerable discretion when it comes to buying shop equipment.

The maintenance of Ford cars has largely resolved itself into a matter of parts replacement. Few machine tool operations are necessary to recondition parts, because the cost of the new parts in most cases is so low that there is no justification in attempting to make the old part serve, unless, of course, there is no other way out of it.

Take, for instance, the Ford crankshaft. From an economic standpoint it is sheer folly to do any great amount of machine work upon it to recondition it for service when the cost of a new crankshaft is but \$8. The same holds true of other units. A new valve costs but 15 cents and what justification is there for a mechanic to fuss around trying to recondition a worn valve?

Parts Are Easily Installed

Along with the low cost of Ford parts is the fact that the parts are easily installed, generally speaking. The Ford flat rate prices are indicative of this. The concentration upon the one design

and model naturally has brought about the things which make for easy parts installation. Accessibility has been carried out to a great extent and with the repair equipment sold by the Ford Motor Co. as well as that made by other equipment makers there is every opportunity for doing the Ford service and repair work in minimum time and doing it right.

An Item of \$200,000,000 This Year for Ford Parts Service Charges Extra

The service station which is equipped to get a part of the vast volume of business incidental to Ford servicing this year has before it a double opportunity for profit. With more than 7,000,000 Ford cars and trucks in operation and something like 2,000,000 more scheduled to roll out upon the highways this year there is opened up an immense field for service in which, as was pointed out in MOTOR AGE of Feb. 28, the Ford dealers, other car dealers and general maintenance shops will have an opportunity to share.

Let us figure conservatively that by midsummer there will be 8,000,000 Ford motor vehicles in operation. From long experience the Ford company has found that service stations for Fords should carry a stock of not less than \$25 worth of parts for each vehicle that it is likely to be called upon to service during the year.

This would mean a minimum of \$200,000,000 worth of parts to be merchandised. The Ford company has made it easy for dealers and garages everywhere to obtain Ford parts. The price lists are available to all, and authorized sales and service stations are instructed to sell parts at a discount to legitimate garages and dealers. This policy has greatly simplified Ford service, making the replacement of parts a large item in the maintenance of the cars.

In addition to the volume of business in the sale of parts the maintenance shop has the opportunity to sell service in connection with installation and adjustment, and flat rates and specialized equipment increase the opportunity for selling service at a profit.

Inasmuch as parts replacement plays such a big part in Ford service it becomes essential that these parts be properly selected, stocked and displayed. This is necessary for several reasons.

In the first place a properly arranged stock of parts makes it possible to speed up the work in the shop as there is no delay when a mechanic finds it necessary to install new parts and can get these parts immediately. It is well to remember that the mechanics in the shop are working against time and every needless delay costs them money and costs the dealer money. The mechanics should, therefore, be given every consideration at the parts counter.

Secondly, a properly arranged parts stock placed so that the eye of the customer catches it induces sales for parts and accessories. But it must be arranged neatly and in such a manner that any part can be found quickly. The same sales psychology holds here as in any other line of business. A neat window display or counter display induces people to buy. To that end every Ford dealer and service station should see to it that the stock of parts is arranged to promote sales.

Adequate Parts Stock Necessary

One of the outstanding problems in the parts department is to carry at all times sufficient quantities of all items to supply both the shop needs and counter sales. Service to the shop and to the customer absolutely depend upon this.

Every Ford dealer and shop proprietor engaged in the servicing of Ford units naturally wants to carry a well-balanced stock of parts. It is difficult to say exactly what each should carry, but in round numbers it might be stated that for every Ford car likely to be serviced by a dealer, service station or garage, there should be about \$25 worth of parts stocked. The Ford Motor Co. in working this out with its dealers takes into consideration the size of the dealer's contract and the larger his contract for cars the greater the volume of parts to be stocked.

Unless the dealer or service station has at hand necessary figures as to the volume of parts sold and the relation of the slower moving parts to the more rapid moving parts, he cannot lay out

his parts stock intelligently. He needs assistance in this and to that end the market affords stock keeping systems which are far superior to anything which the average shop might evolve in the way of home-made equipment.

There are several concerns in the market dealing with storage systems for Ford parts and it will pay any shop contemplating the servicing of Ford cars, trucks and tractors to study the various systems with a view towards finding the one which meets its requirements.

Obviously it is impossible in an article of this kind to go into detail regarding each of the systems now on the market, but in order that dealers and service sta-

tions generally may know more about them we make mention in the succeeding paragraphs of the parts storage system for Fords as made by one of the leading equipment manufacturers.

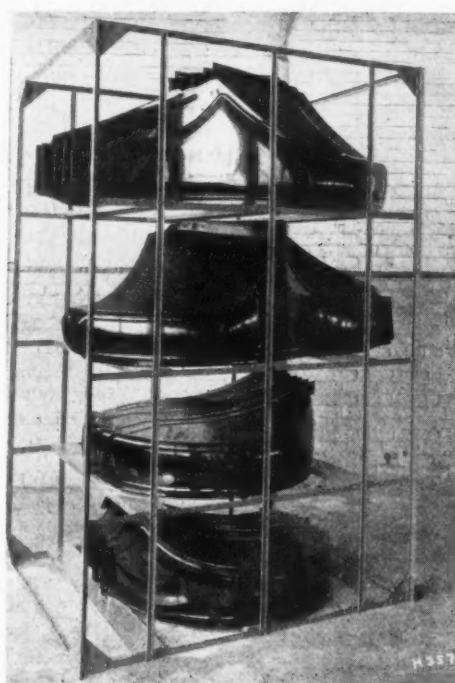
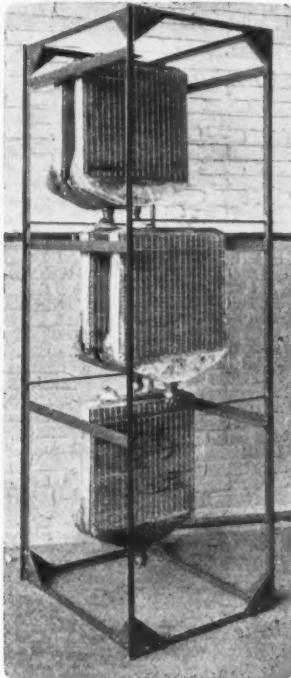
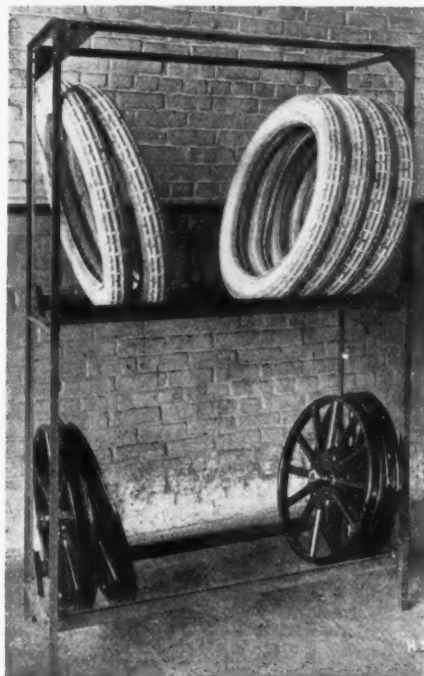
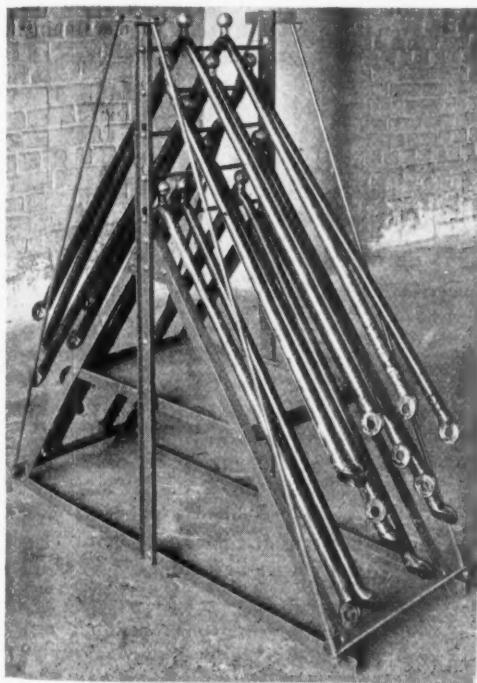
Designed According to Parts Book

Among other things the company claims as features for its system is that it is designed according to the latest Ford parts book. There is also the correct number of bins and these are of the right size and correct shape.

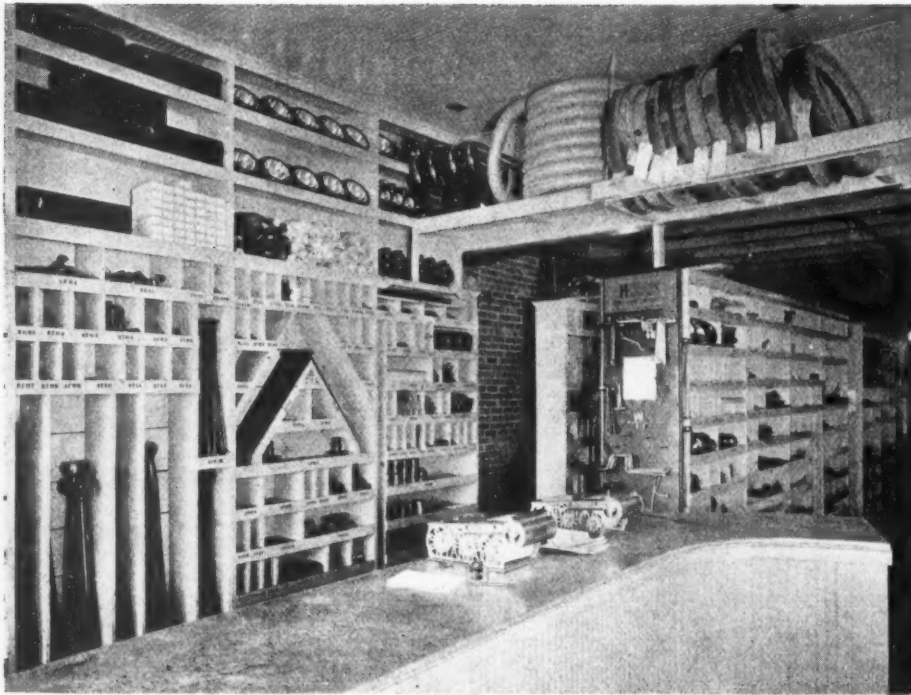
In this equipment for Ford parts each unit represents a certain section of the parts book and all told there are sixteen

units. Unit 1 takes in the rear axle parts; unit 2, rear axle and front axle; unit 3, wheels and frame; unit 4, gas tank and motor; unit 5, motor; unit 6, motor, commutator and magneto; unit 7, transmission and so on down the line until unit 16 is reached, which is devoted to touring car and roadster top and windshield parts in conformity with the last pages of the parts book.

To get some idea as to the way in which the system is laid out it is well to take a certain section of the parts book, say the part devoted to the subjects Wheels and Frame, found on pages 7 and 8, and see how the bins have been laid out to conform to this.



In order to obtain a tidy looking parts department, care must be given to the display of bulky units, such as fenders, springs, etc. Here are shown several racks made by a manufacturer for the display of Ford radius rods, runningboard aprons, tires and wheels, springs, radiators and fenders



If a dealer or service station spends considerable time and money a pretty good job can be done in the way of making parts display racks and bins. Here is shown a good example. The trouble with most home-made equipment is that it takes up too much room

We find that the unit is laid out to conform to the parts devoted to wheels and the frame. Complete wheels are not carried in the unit and consequently we find the first item listed in this unit is part No. 2803, which is a front hub assembly. The next item, No. 2803B, is a front hub assembly with roller bearing cups. As shown herewith, the unit follows exactly the Ford parts book and all bins are labeled with the proper number of the part as given in the parts book. Obviously bulky parts cannot be stored with the smaller units and so we find the units built to accommodate only the smaller parts which can be conveniently grouped. For the more bulky parts such as radius rods, fenders, wheels, etc., the company advocates racks such as shown on these pages. This is infinitely better than allowing such parts to lie around on the floor or remain in their crates, a practice which always clutters up the stockroom floor and creates anything but a good shop morale.

Equipment Requires Little Space

Each unit in the system is 3 ft. wide, 7 ft. high and 1 ft. deep and the floor space required is said to be about one-third less than for a similar system in wood. Too often where a shop builds its own parts bin out of wood the mistake is made in making the bins all of one size, or perhaps with a little variation in the upper and lower bins. Inasmuch as the parts of a motor vehicle differ so vastly in size and shape, it is easily realized that to get the best results the bin for any particular part should be laid out in shape and size to accommodate the required number of that part.

This is what the manufacturer has done in its system for Ford parts. Each bin is labeled at the factory with the correct parts number and the label holders are parts of the shelf front and cannot loosen through rough usage.

A parts stock system kept on this plan makes an accurate inventory possible in one-quarter to one-half the time usually required and all stock is visible, preventing the dealer's running short of fast-selling items. In addition overhead is reduced by minimizing clerical work and parts room help.

Too much emphasis cannot be placed

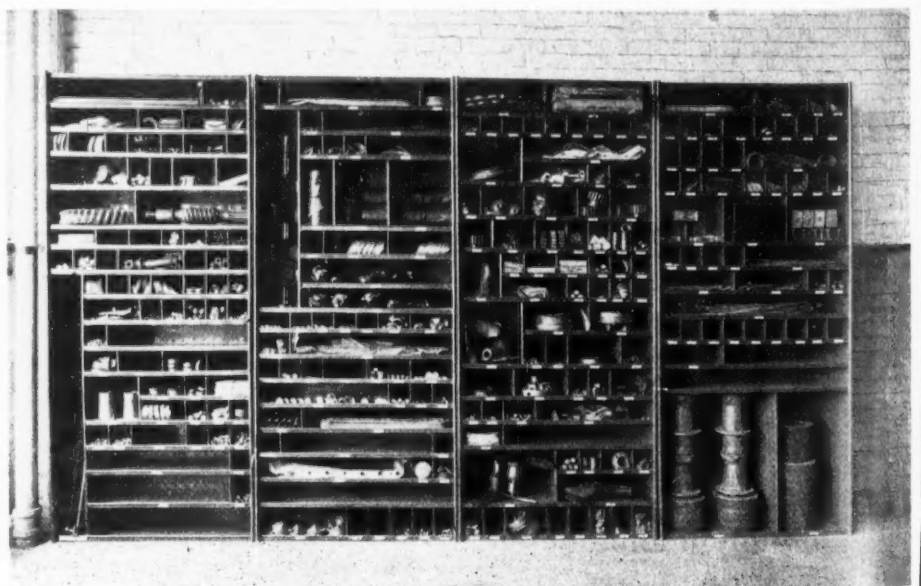
on the importance of properly keeping the parts stock. The trouble often is that the dealer's parts stock is simply a store room rather than a salesroom. Instead of keeping the parts out of sight from the customer, let him see them. Parts should be displayed as well as accessories. A customer may come in to buy a stoplight and while so doing see a certain part displayed which he knows he is going to need very soon. The chances are he will buy it.

In some instances shops have built their own parts bins and have done a good job of it. But as a general thing we have found that a dealer or service station is better off by buying its equipment from manufacturers who have given time and thought to developing it far better than the average dealer or other individual could do. Such makers have studied the problem from many angles and in most cases their activities have taken into consideration the needs of the small town dealer as well as those who operate big establishments in the large cities.

Put Your House in Order

Before the great problem of servicing the 8,000,000 Fords which will be operating in this country at the end of the year can be adequately handled dealers and service stations generally must put their houses in order and one of the most needed things along this line is to neatly and efficiently display the stock of parts, so that instead of being merely stored they will be sold.

(The writer of the foregoing article acknowledges indebtedness to the David Lupton Sons Co., Philadelphia, manufacturer of parts storage systems, for information and photographs in connection with parts storage and display.)



Here is shown a Fordson tractor parts stock, arranged according to the parts price book of the Ford Motor Co. Note the irregularity of the bins, which is done to accommodate the size and number of the part

They Took a Chance on Hiring an Expensive Man—

And To-day Dolan & Sheppard, Niagara Falls Hudson-Essex Representatives, Are Operating a Service and Maintenance Department on a Profitable Basis, Largely Through the Efforts of a Service Manager Who Understands the Psychology of Selling

PUTTING a losing shop on a paying basis and winning over the confidence of customers, briefly, is the story of V. E. Allen, service manager of the Dolan & Sheppard Motor Corp., Hudson & Essex dealers at Niagara Falls, N. Y.

Before we talked with Allen, one of the members of the firm of Dolan & Sheppard told us that before Allen came with them things in the service department were pretty much topsy turvy. Everything was wrong. Customers were kicking like wild steers. The service was rotten, they said.

The Old Story of Delays

It was the old story of delays; jobs not properly executed; exorbitant repair bills; uncouthness of mechanics and the hundred and one other things which so often cause the motoring public to condemn the dealer's service.

Things got to such a state that Dolan & Sheppard had to do something. As a firm they had the best intentions in the world to give their customers 100 per cent service from the vehicles they had bought.

They talked it over and, if we recall rightly, conversed with a man from the factory. This man suggested that they hire Allen. Allen was at that time connected with the Hudson factory at Detroit. He had spent many years at the factory and knew practically every department of it. He had served his time on the shipping platform and knew just what was done to the cars before shipment.

He knew just what the dealers' service departments would have to do to condition the cars for delivery to customers. He knew what the engineering department was doing. He knew how the parts department functioned. He had been closely associated with the factory service department. In fact, he knew the essentials in every department. He was thoroughly familiar with the products of the factory.

Acquainted With His Product

You can mention any particular model of Hudson car and Allen can tell you, in the twinkling of an eye, just what kind and size bearing was used in the main-shaft of the transmission or whether a certain part was splined or keyed on.

Dolan & Sheppard for a time thought Allen was too high-priced a man to hire for the service department. They did not deny he was a good man for the job, but wasn't he, perhaps, too good?

Yet, they knew things were in bad



There is a businesslike atmosphere about the service entrance of Dolan & Sheppard. Here is shown Service Manager V. E. Allen selling maintenance operations to a customer. He writes down every operation to be performed and the shop foreman knows exactly how to go about executing them, because of the excellent teamwork

shape with them and finally one of the men said to the other "Let's take a chance and hire him."

Today they will tell you it was the best chance they ever took. They never have been sorry since. Allen has changed a chaotic condition to one of harmony. Customers are tickled with the service they are getting and so are Dolan & Sheppard.

Working Under Handicap

Now, the strange part of it all is that this concern has not an elaborate building and all the fine fittings and stage settings that generally go with such a building. No, on the contrary, the building is a rather old one and never was intended for a sales and service building.

But nevertheless, with this handicap, the company is not only selling a vast number of cars, but making money on service and maintenance through a host of satisfied customers. One of these days the company expects to put up a building for service and maintenance and we believe without a doubt it will be one of the most successfully operated places of its kind in the country, so long as Dolan & Sheppard plus Allen have anything to do with it.

At this point it probably is well to

remind the reader that there are thousands of tourists driving through the city of Niagara Falls each year. And every year the number increases. A lot of these tourists drive Hudson and Essex cars. Naturally if they want service on their cars they seek the dealer representing those cars in the community.

Dolan & Sheppard are after this tourist business and one of the best things we heard Allen say was that he did not care where the Hudson or Essex car came from, he was going to see to it that the man or woman who drove it was fixed up properly if they came into his place. This is quite different from many dealers who look only to the cars of their community and make no effort to get the business of the tourist who happens to be driving the make of car they sell and service.

The building used by Dolan & Sheppard is a three story affair, the shop occupying the top floor, while the other two are given over to storage, this because of the fact that there naturally is considerable storage business in a popular tourists' resort like this. The thought of the company is to eventually use this building for storage only and move into new quarters for sales and service.

Ordinarily you will find Allen stationed on the ground floor of the building where he immediately can get in contact with anyone driving in. Also he can watch the curb for any customer who may chance to stop outside.

Easy to Find Him

He does not let the customer come in contact with the shop. Should a car come in for even so slight a job as draining the oil and refilling with new, the car is sent by elevator to the third floor.

The day we chanced to come into this place Allen was on the shop floor, because he was acting in the role of foreman, inasmuch as the foreman of the shop was on a vacation. During this period Allen spent his time between the first and third floors—and did both jobs well. He knows above all how to approach a customer and then again he can turn right around and do duty as foreman.

In this connection we noticed a little thing in sales psychology. It happened that a message was sent to Allen on the top floor that two women had just arrived in an Essex, from California, and were on their way to New York City. Allen went down to the ground floor, but slipped into a washroom first and cleaned up a bit before talking with the two women. As he put it "I might have to get in and drive the car."

Some Sales Psychology

After Allen had attended to the wants of these women customers, he turned and said "You know, when I came to this place I wanted to just pack right up and go back to Detroit."

However, he had come to take the job of service manager and he had promised the heads of the organization to get things squared away properly if they hired him. So he stayed.

"How did you go about the job," we asked him.

"Well, the very first thing I did was to clean up the place," said Allen. He caused several wagon loads of junk to be hauled away from the place. Everything that was of no value went before the onslaught of his broom; scraped cylinder blocks, broken gears, worn out bearings, old rags, oil cans, torn curtains and the odds and ends which usually are tossed under the bench were tossed into the junk dealer's wagon.

Building the Personnel

There was so much to be done that Allen hardly knew where to begin. There were two mechanics in the shop and as Allen said, "They weren't worth a damn." But to fire them on the spot would be fatal. There would be work coming in and two poor mechanics are probably better than no mechanics.

He had in mind a man whom he knew would be a good shop foreman. This man he hired and the mechanics he fired. Allen and the new foreman did the shop work between them for a time.

There had been no time system in the shop. The mechanics at the end of the day would grab a piece of paper and

jot down what they thought would be about right for the time on various jobs. Naturally some customer would get stung on this manner of keeping record.

So Allen put in a time system. He had some cards made up and they soon were put into effect. Today every mechanic's time card in the shop must show eight hours' work and in just what way those eight hours were applied. The "shop time" will easily come to light.

The mechanics ring out on a job the minute it is finished and are ready for the next one. They come to foreman's desk for this. His desk is right by the clock, and the mechanic does not have to walk any distance to locate the foreman. Thus when a mechanic rings out, he turns to the foreman, who immediately directs him to another job, the ticket

Give Them More Than They Expect

"Give them just a little more than they expect," says V. E. Allen, service manager for Dolan & Sheppard, "which will be noised around and the first thing you know you will have a lot of satisfied customers." And it has worked out that way for Dolan & Sheppard. Many tourists each year drive to Niagara Falls and make it a point to visit Dolan & Sheppard because of what some tourist has told them about the organization.

already having been made on the ground floor by Allen.

In this connection a word might be said about the time saved in writing out the shop order. We have previously stated that Allen is an excellent trouble shooter and knows the structural details of Hudson and Essex cars. Therefore, when a job comes in an order to, "Take out knock in engine," never goes down on the shop order.

Every shop order has a definite order written upon it. When Allen tests out a car or engine he knows what's wrong and knows what must be done to set things right. If it's an engine knock, he knows pretty well what it's all about. So he writes out a shop order to the foreman something like this: "Take end play out of camshaft," or "Take up play in timing chain."

Then when the car comes to the shop, the foreman knows just what must be done and so does the mechanic who has the car turned over to him. No time is lost in the shop by this method.

Rounding Out the Parts Stock

When Allen came to this company the parts stock consisted largely of a small closet full of non-essential parts. They were poorly chosen. There were parts for which there would not be a call once in five years. The things the customer wanted were not there; the small stuff, bolts and nuts; bushings, etc.

So he set about getting together the things he knew would likely be needed; the parts on which the turnover was big. In fact, he has a collection of parts which contain at least one of everything that can be found on a Hudson or Essex. Such parts as door handles, windshield adjusting bracket, carburetor control rods, switch parts, radiator stay rod, etc. make up this collection.

Of course, there is the regular parts stock, in which the parts and material are properly binned and marked, but in this, as stated before, the parts have been selected in relation to their rate of distribution to the trade.

Allen believes firmly that to keep customers satisfied you have to give them just a little more than that which they have coming to them. That sort of spirit and desire to serve will be "noised around" as he said and, in a place like Niagara Falls, which is frequented by thousands of tourists each year, this gospel of good service will have the effect of tourists seeking the home of Dolan & Sheppard.

They Get Free Advertising

It already has worked out that way. Bill Jones, out in Iowa, toured to the Falls this spring and on his return home met many other tourists. During conversations he probably made it a point to tell the tourists to be sure and stop at the Hudson-Essex place. Allen said many tourists frequently told him they had been advised to seek his place.

Probably when we tell our readers this little incident they will readily see why tourists recommend the place:

One night an Essex car was driven in with a set of badly chewed up differential gears. The owner of the car was perturbed because he and his family wanted to get out of Niagara Falls that night. It was about 5 o'clock at night when the car came in.

Remember we said earlier in the story that Allen wants to see every Hudson and Essex owner fixed up right regardless of where he comes from or the time of day he comes in. So in this case he got to thinking. To pull out the axle and install new gears would be out of the question if the car was going out that night.

The Wrecked Car in the Shop

Then he remembered he had a wrecked car up in the shop. The rear axle on this car was unhurt. He did a little thinking and told the customer to take his family over to the hotel for a couple of hours and the car would be ready. He and the mechanics got busy. They ripped out the old axle completely and installed the one from the wrecked car.

The man called for his car and was off as he had intended. He was charged only for the work and the price of the gears. And the axle he got was a lot newer than the one taken from his car. But that's service for you. Allen said he would stay up all night to work if a customer wanted to get out very badly.

Do you wonder we are enthusiastic about him?

Bill Fixit's Return

Westville Gets a Snow Storm and the Red Head Gets a Brain Storm When Bill Opens Up With a Talk on Cutouts

BY A. H. PACKER

THE WINTER'S back was broken. The zero spell had hung on for three weeks and then released its grip on Westville as suddenly as it had come. Bill sniffed the air and got an inspiration. Two or three months would elapse before the farmers would be ready to plant, but now was a good time to lay some foundation work on which to build a sales campaign for Runwell tractors, and a heavy fall of snow, the latter part of February gave Bill just the opening he needed.

The morning after the storm the good citizens of Westville, center of the richest farming county in the state, awoke to find themselves marooned in their own homes. True they could wade through the drifts to the nearby stores, but as far as transportation was concerned there was "everything else but," as Rufus Rastus might have put it. But what was this coming down the street? A water spout of powdered snow? Such would the answer be, if a thing like that were possible. No, it was the first gun in Bill's attack. One of his three tractors with snow plow ahead, brushing the drifts aside like leaves, cleaning a way to his shop, to the movie, to the principal stores and the roads leading from town.



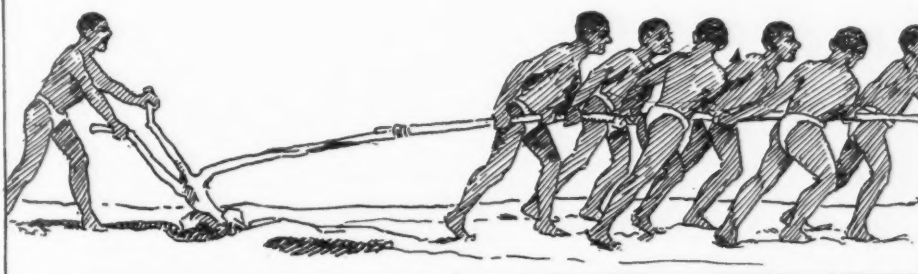
Three busy tractors, three ample plows, three close-mouthed drivers sworn to silence, and above each tractor a sign which read, "The Palace Theatre tonight, You'll See." Just that and nothing more, and neither bribe nor coaxing could get a word from any of Bill's employees as to what it was all about. The big snow was the topic of conversation, all that day, and linked with it was Bill's well-baited ad.

Conversation among the waiting customers at the A and P was typical. "Go in' to the Palace tonight?" "Well I had thought some I might go, how 'bout you?" "Me, I don't care what that Fixit fellow's doin', but with nothin' else to do, I did think I might go just for the comedy."

No one was curious or cared, of course, but all had some reason why that particular night was a specially favorable one on which to take in a movie and the house was packed as it had not been since the first sting of winter had cracked the pipe at the courthouse pump.

After every picture, Bill's slide was shown, a graphic portrayal of the advance spread by nature. The effect was varied, some laughed, others winked at friends as if to say, "I thought so all the time," while others looked around to see

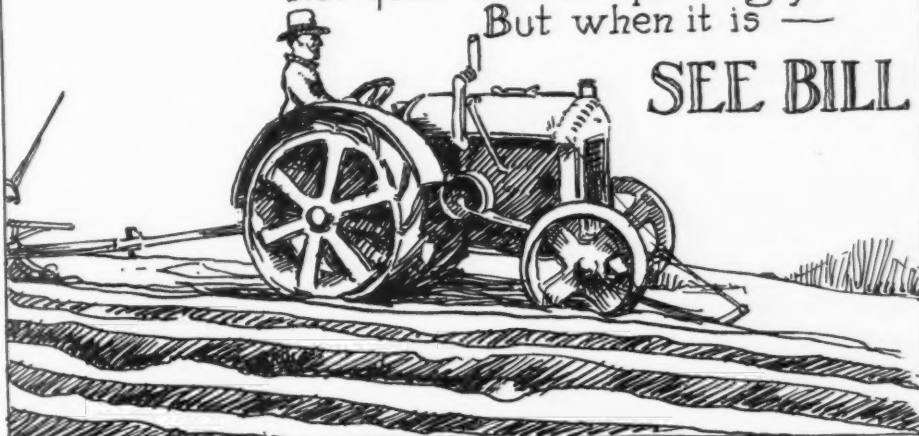
THE OLD WAY WITH SLAVES



THE NEW WAY WHICH SAVES

Not quite time for plowing yet -
But when it is —

SEE BILL



who knew they'd come. It made them think and when thinking starts, something is due to happen.



The Monday after the big snow, Hutch, Valvy and the Red Head, the emergency drivers, were still full of their adventure, but Bill had a dose of cold water to hand to Red in the shape of a letter from Squire Higgins in the next town, also a returned cutout, which spoke for itself.

"How come," said Bill, "that you pick from stock a cutout and ship it out without checking it to see if it had all the works in it?" "I couldn't very well test it," said Red. "You see, we didn't have a generator to test it with."

"A fine example you're setting the Valve Grinding Fiend, to pass up a test on stuff you sell, just because some one doesn't pick up a silver plated test, take the tinfoil off of it and hand it to you on a tray. I'll have to put you back on the floor, crawling around removing pans and starters if you start getting rusty." Red flushed and tried to smile but made a mess of it and said nothing.

"Never mind," said Bill, and winked

at Hutch, "I may have done the same myself when in a rush, but it's always takin' a chance, and you never can tell when the luck will break against you. It's such a short job to test a cutout to see if it's working, if you know how, that the test should never be omitted, even when there is no generator to use for the work.

"It doesn't make any difference whether the cutout is connected to a generator or where it is connected, there is one thing that must happen if it is to cut in right. There must be a fine winding that is not broken, and a voltage of about 7.5 or 8 volts must send enough current through this winding to make the points close.

"Then if you have a 12-volt battery or two 6-volt batteries or even a number of dry cells you can get about the voltage you want, connect the shunt winding to various voltages and see whether it cuts in and when. In Fig. 1 we have an illustration of such a test where the generator terminal and the cutout base, which are usually the ends of the shunt coil, are shown connected to 8 volts. When the cutout spring is about right the points will just barely close on 8

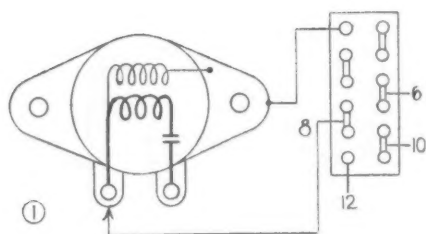


Fig. 1.—Using a battery to determine the voltage at which the cutout points close

volts but will not close on 6 volts, although on 6 volts they may stay closed if the points are pushed together by hand.

"Connected to 4 volts the points should not stay closed even when closed by hand. If they do the cutout may stick when in service.

Varying the Battery Voltage at Cut-out Imitates the Generator Action

"If the points do not seem to close properly with 8 volts connected, it is possible to try 10 or 12 volts to see if the trouble is due to a stiff spring. If so the spring needs to be weakened a bit. The condition of the shunt circuit can usually be determined by a spark seen when the contact to battery is broken.

"Another way to check the shunt circuit is with a 110-volt test lamp as shown in Fig. 2. The lamp will usually light dimly although the opposition to current flow is greater when alternating current only is available for testing, so that the lamp may not light. A spark, however, will be obtained. If direct current is available it is somewhat better, for the lamp will probably light and the amount of current going through is usually more than the coil needs and closes the points with a snap.

"To check the series circuit a 6-volt lamp with battery may be used as shown in Fig. 3, but in this case we have to close the points by hand to see if the lamp lights, which shows the series circuit is not broken.

"One thing, however, we have not checked in these tests, and that is the direction the shunt winding goes around

the core as compared to the way the series winding is wound. We do not care which way either is wound just so it is right for the other one, for when the generator is sending out charging current the current through the series coil must strengthen the magnetism produced by the shunt coil and, when discharge current flows, it must oppose the

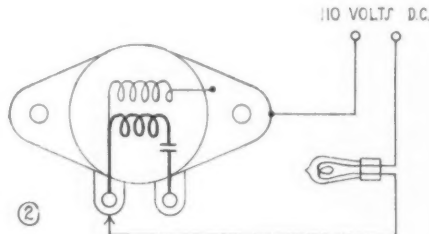


Fig. 2.—110-volt lamp test for open shunt coil in a cutout

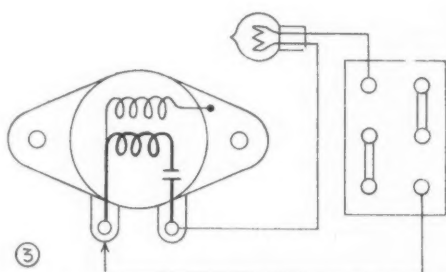


Fig. 3.—6-volt lamp test for circuit through points and series coil

action of the shunt coil.

"We do not need a generator to check for this condition, however, for we can figure what the action should be and then use a compass and a battery, the method of doing this being shown in Fig. 4 and Fig. 5. In Fig. 4 we have positive battery connected to the generator terminal, with the negative battery connected to the base plate, so that the battery will act much as the generator would do. We will then assume that, with the cutout laid on its side, that the north end of the compass is attracted by the lower end of the cutout core.

"When the generator charges the battery it sends current two ways from

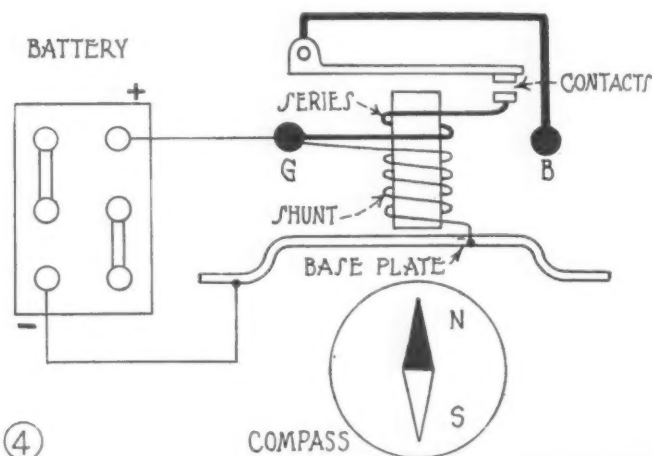


Fig. 4.—Checking magnetic action of shunt coil with 6-volt battery

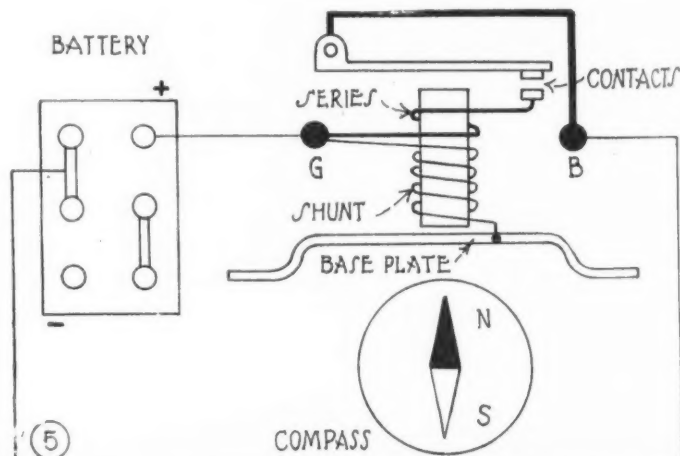


Fig. 5.—Checking magnetic action of series coil with one cell of a 6-volt battery

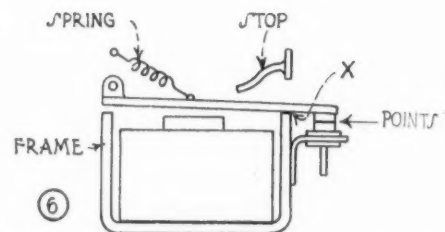


Fig. 6.—If the moving armature touches the cutout frame at (X) the points may not open when engine stops

the Gen terminal. One way is through the shunt coil and the other way is through the series coil and the points to battery, and these two currents are both supposed to hold the points together. Therefore they should have the same effect on the compass.

Checking the Series Coil for Magnetic Effect

"In Fig. 5 we connect to send current through the series coil and because the resistance of this circuit is very small only one cell or two volts of the battery should be used. Even so the current will be perhaps 30 amperes or more and in this test it would be well to use a fairly long piece of wire to get some resistance in the circuit. With this current flowing the action of the compass should be the same as before, the same end of the needle being attracted.

"In this test the same end of the battery must be kept connected to the Gen terminal so that no mistake in judging results will be made.

"One thing only we have not been able to test very well without having a generator, and that is the way the cutout points open, although the 4-volt test is a fair check on the operation. We could of course imitate the generator action by connecting the shunt coil to a six-volt battery and at the same time we could connect another battery and a rheostat in such a way as to send a bucking current through the series coil and points. At some value of the bucking battery current the points should let go, but here we would have a difference in the generator action and the battery imitation.

"When the points of the cutout start to

open with the battery test we would still have full six volts on the shunt coil and a vibrating test might result. With actual operation with the generator, however, the instant the points open and the generator and battery become disconnected, the generator voltage, which is actuating the shunt coil, immediately drops, so that the shunt coil is weakened and can not close the points until the generator speeds up again.

"This test, however, is not very vital if the cutout is one of reliable make for we can assume that it is built substantially right and, if we have tested it for direction of coil winding and for cutting in and out on various shunt coil voltages, there is but a very remote chance of its giving trouble.

Common Faults in Cutout Adjustment

"The most common trouble encountered with cutouts is sticking, which discharges the battery. The car owner is usually ignorant of what is happening and reports that the starter worked all right one day and the next day would not work. The cutout sticking would overnight, of course, run the battery down to the point where it would hardly operate a light, let alone supply current enough for cranking.

"An adjustment which will account for sticking is shown in Fig. 6, where the closing of the contacts is accompanied by a reduction in the air gap between the armature and frame, such that they nearly touch. This point is marked (X) and, if the right parts touch here or the gap at (X) is very small, the magnetic

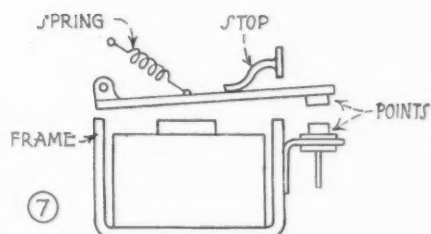


Fig. 7.—If the stop lets the points open too far the points may close too late or not at all

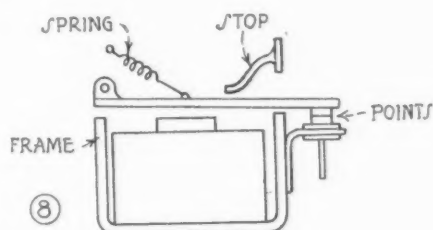


Fig. 8.—Normal gap settings on the average cutout are shown in this illustration

pull is very great for a small value of current in the shunt coil. It also means that, with the points closed and the shunt coil connected to 6 volts, even a discharge current of 15 amperes may be unable to weaken the magnetism enough to let the spring open the contacts. The enormous magnetic attraction when the iron parts touch, as compared with the moderate pull when a slight air gap exists, can be tested with an ordinary magnet magnet. Just hold a piece of iron near it and see how, as the gap is reduced, a point is reached where the mag-

net suddenly draws the iron piece against its poles.

"The remedy is to change the adjustment so that the contact points touch while the magnetic air gap is still about 1-32-inch, the exact way of accomplishing this result depending on the cutout construction.

Cutout Closes Late

"Another cutout trouble is one that prevents the generator charging the battery at low car speeds and it may be necessary to run the car at 20 M.P.H. or so before charging takes place. Then the ammeter hand may suddenly jump up to 6 or 8 amperes charge. This means either that the spring is too stiff or the magnetic gap too great. If the cutout releases properly it shows the spring to be about right and the setting which is to blame may be like the one illustrated in Fig. 7. All cutouts have a stop of some sort to limit the opening of the points and, in Fig. 7, the stop is shown bent up too much so that the points open too far. This means that a voltage of 10 or 12 may be needed at the shunt coil to make the magnetism strong enough to operate across the wide air gap. The remedy is obviously the bending of the stop so that the air gap is less.

"A setting which is normal on the average cutout is shown in Fig. 8 where the air gap is about 1-32-inch and when the points open they are separated by a space of about 1-32-inch. These figures will not, of course, guarantee results but slight variations from these dimensions may be needed in specific cases."

23 Years Ago This Week In Motor Age

(FROM MOTOR AGE, March 13, 1901)

All Aboard for the Show

INDIANAPOLIS, Ind., March 10.—It can safely be said that every representative automobile and bicycle man in Indianapolis will attend the Chicago automobile show, also that Indianapolis will have larger representation than any other city of its size in the country.

A representative of the MOTOR AGE visited many of the concerns in this city during the past few days and not one of them will be minus a representative, or more than one, at the show. The exhibitors from this city are many and one or two concerns that will not exhibit regret it very much, as they know the good results that will be obtained.

As might be expected, the bicycle men are not as much interested in the show as are the automobile people, but despite this fact they will be in attendance in large numbers.

No less than five representatives of the National Automobile & Electric Co. will be in attendance, including President Dow and N. T. Hearsey. They predicted, in the MOTOR AGE of two weeks ago, a prosperous exhibition, and gave ample

reasons. Manager Pepper of the Waverly branch, together with Robert H. Hassler, will attend, as will George C. Detch, of the Detch Wheel Co., and Conrad Mueller, of Mueller & Westing. L. M. Wainwright, manager of the chain factory of the Automobile & Cycle Parts Co., Cleveland, will in all likelihood be present. The G. & J. Tire Co. will have two representatives at the show, and in addition to these several of the smaller bicycle dealers will attend to get pointers on motor bicycles.

Fred Patee told a MOTOR AGE man that his exhibit will, no doubt, prove an attractive one, and that he will be present, together with J. F. Morris, the inventor of the Morris motor, which is used on the Patee motor bicycles.

Fight Over an Auto

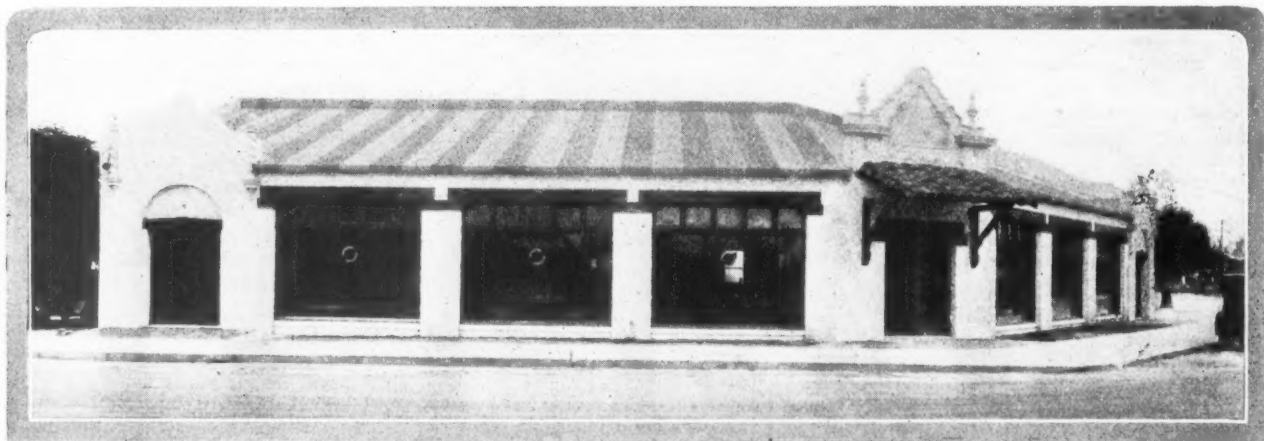
Joseph Leiter of Chicago was a witness and a successful plaintiff in replevin suit which was tried in the common pleas court at Providence, R. I., last Friday. The suit was against Louis Lyons, involving a motor vehicle invented by Edward C. Warren. Mr. Leiter claimed that he agreed to pay \$2,000 for the

manufacture of the motor and the living expenses of Warren while he was perfecting the machine, but he had already paid over \$4,000 and he considered the machine his. Mr. Lyons said that the contract was violated because no corporation was formed, as agreed. The jury took Mr. Leiter's view of the matter, returning a verdict in his favor.

"The Lord Loves a Hustler"

C. Arthur Benjamin, who has recently established a Locomobile agency at Atlanta, Ga., never misses a sale whatever may be the adverse circumstances. Recently he was taking an intending purchaser out "locoing" and the customer had the check in his pocket ready to hand over after the trial trip. Through the stupidity of a mule team driver there was a bad collision, in which the loco was piled bottom side up on top of the mule outfit. The customer was knocked senseless. "Ben" sent out an ambulance hurry call and after dispatching the patient-customer to the hospital, returned to the wreck, righted it and towed it to town. He then sought the injured customer at the hospital. As "Ben" entered the room the man recovered his senses for the first time, reached for his pocket book and handed "Ben" the check to close the sale.

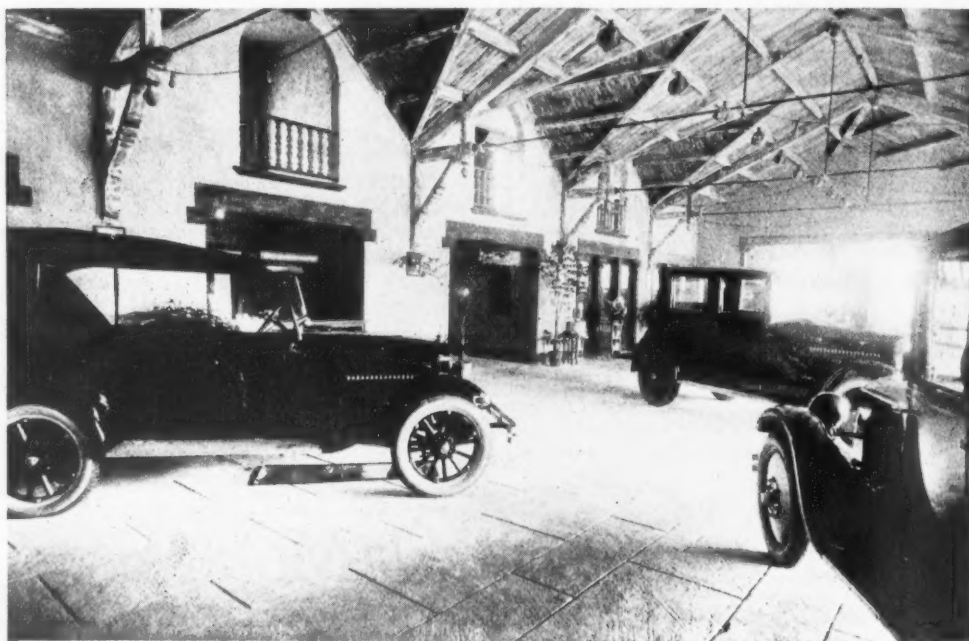
MOTOR AGE'S PICTURE PAGES



The southern and western cities of the country seem to be putting it all over the rest of the country in the style and novelty of their buildings. This one, recently erected by the Oliver Motor Co., West Palm Beach, Fla., is a good example of carrying an idea out



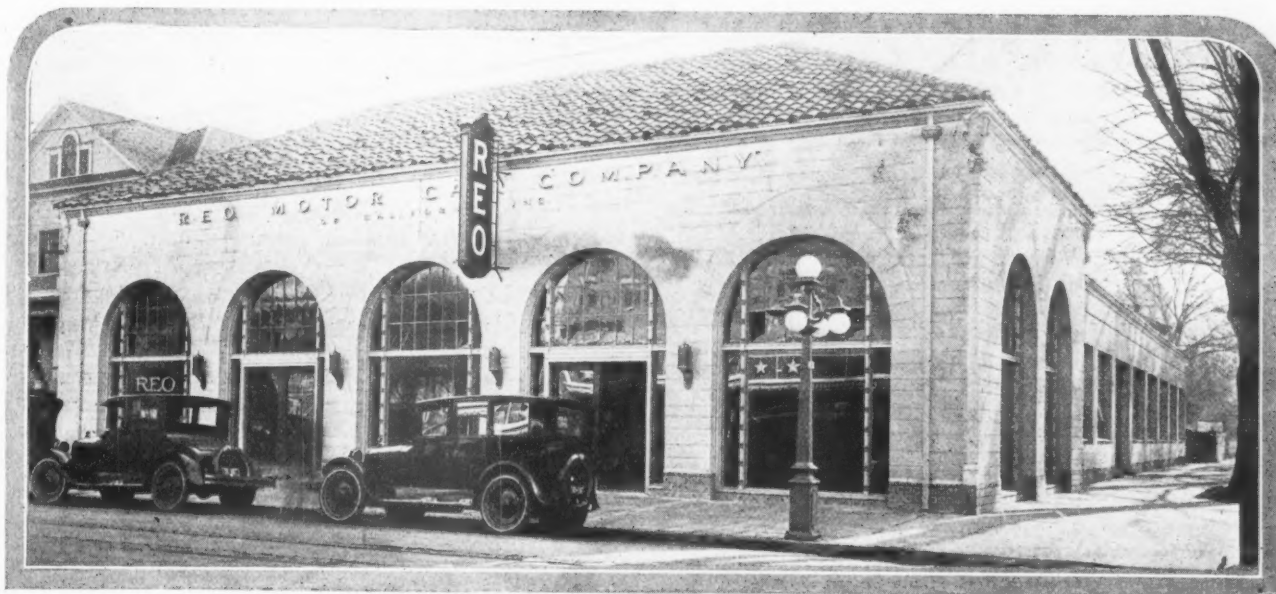
Not only is the general style taken from old Spanish architecture, but details of the interior are also splendidly executed



The interiors give an atmosphere to the motor car that is never found in the buildings of more modern decorations—not to say that old Spanish is not "modern"—for it is, and it makes the difference that people like in sales places



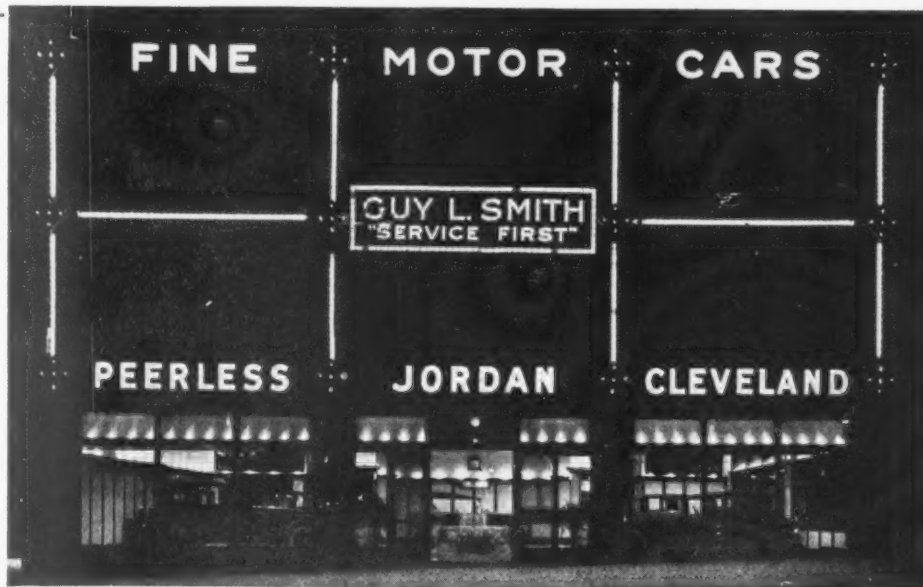
S OF AUTOMOTIVE INTEREST



Above is another type of Spanish architecture, carried out in the building of the Reo Motor Car Co. of California. Such buildings bring home to the public the fact that automobile men are building not only their places of business but their business, as well, on solid foundation



Guy L. Smith of Omaha gets lit up every night



The Howard Automobile Co., Los Angeles, to the left, and the S. A. Ryan Motor Co., Miami, Fla., above, are other splendid examples of automotive buildings

MOTOR AGE

Reg. U. S. Pat. Off.

Vol. XLV

Thursday, March 13, 1924

No. 11

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Used Cars and Trade Restraint

AN arm of the Federal Government has touched the used cars problem. Just what the result will be is a matter of conjecture. In this particular case the Federal Trade Commission has charged the Boston Automobile Trade Association with the exchange of information that suppresses competition and "prevents members of the association and other dealers in the territory from giving higher allowances on used automobiles than those fixed by the defendants."

The practice of this association which is attacked in the action is one that has been used elsewhere and consists essentially in the collection of statistics from which a schedule of values of various makes, models and types of used automobiles is compiled and published.

The Boston association, which operates through a statistical bureau, states in its own defense that the action complained of has been discontinued and that the bureau's efforts for improvement of the used car situation are now entirely educational. It is to be hoped, however, that the point complained of will be adjudicated and that a definite ruling on the legality of such practice may be obtained.

As the matter now stands the automobile dealer is reminded most emphatically that his used cars are his

own problem and that his buying and selling of them should be free of combination in restraint of trade. A great many dealers who have successfully handled the used car problem will agree that this is as they would have it. On the other hand there are many dealers who would like to know how far they can safely go in cooperation in the buying and selling of used cars.

Balloon Tires

THE multiplicity of sizes and types of balloon tires now on the market tends to confuse both dealer and customer. Nevertheless reports from the trade are that there is a good demand for tires of the greater air capacity to be used with lower air pressure than the old standards. It is natural that in the introductory stage a good many experiments will be tried. The important thing to keep in mind is that tire makers, ever on the lookout for progressive ideas, are doing their best to develop a type of tire that will represent a distinct advance over the old types. Results thus far with balloon tires indicate a decided step in the direction of progress.

No Air

"I CHANGED my car to a different garage the other day," a friend said to us. "I had been keeping it there a few days when I noticed the tires needed air. I asked one of the proprietors of the place, which by the way also operates a general service business, where the air hose was.

"To my surprise he said he had none. When I wondered why, he said it costs money to pump air, just as if I didn't know it. He told me I could get air at a tire store. Well, I needed some gasoline and oil and instead of buying it from this garage I drove a few blocks up the street to where there was a filling station with a convenient air hose. When my month is up I am going to move my car."

It is hard to understand how this garage operates successfully without an air pump. There certainly must be many demands from storage customers for air and with a large number of cars going in and out constantly it seems that there would be a great deal of tire service that the shop might profitably render if it were equipped with an air compressor. And then there are so many ways in which compressed air can be of use in the service shop.

We are not sure the place operates profitably. Looking it over we observed from signs on the windows that it once had the agency for two very popular cars which now are represented by a progressive concern a few blocks away.

Perhaps it has cost this garage a great deal of money NOT to pump air.

The Tale of the Good Scout

CHARLIE was well known and well liked. Few of the car owners either in his territory or in miles around it, did not know him by his first name. Everyone spoke well of him. Most people defined him as a "good scout"—he was always willing and ready to help the fellow who was "down and out." Or, if he wasn't "down" and was "out" of funds, Charlie would always let him have a few until next week.

If a fellow broke down with his car and didn't have the ready funds, Charlie would fix it up and he could pay for it "next week." Everything was "next week" with Charlie—he went along smiling and happy until

one day, he realized that "next week" the sheriff was coming over to sell everything that Charlie owned. The rest of the fellows in the world were not "good scouts." When they loaned a man money or sold him goods on time, they wanted payment promptly, not "next week."

These birds that fly "next week" are unprofitable things—they are good things to leave alone. Charlie learned this too late but perhaps the next time he'll know better. Be decent, cordial but firm when it comes to money for, regardless of what others say, you'll find that being a good scout doesn't get the "sheets" which are horribly necessary these days.

Your Public Servant

THE Post Office Department is authority for the statement that careless addressing of mail matter results in a waste of \$1,740,000 a year. Wrong address and absence of street numbers are some of the things causing this waste. Many letters addressed to both business firms and individuals in large cities are delayed because of lack of street number while a postal employe uses a directory to find the right number. The department estimates that 200,000,000 pieces of mail a year are given directory service. This service in New York City alone is said to cost \$500 a day. First class mail matter which cannot be delivered, nor returned because of lack of return address, is said to number 20,000,000 pieces annually, all of which go to the dead letter office. This subject should receive the careful attention of all business men, including those in the automotive business.

Motor Cars and Education

AN analysis made by the Educational Automobile Chamber of Commerce reveals that those states which spend the most per capita for education also have the greatest number of motor vehicles in proportion to population. It is significant that the progressiveness of a community is marked by these two things.

Flat Rates

FROM many sections of the country come reports of the spreading use of flat rates. Successful distributors and dealers testify to the business-getting value of quoting a definite price for the job. The Chevrolet retail dealers in the city of Chicago have united in an advertising campaign to inform the public that they are ready to give service on the flat rate basis. They are prepared to quote a definite price for any well-defined repair job. They know the effect this will have on the public. They know all of us like to buy a definite thing for a definite price. MOTOR AGE readers in cities and villages are being given the best available information on the installation and operation of the flat rate system.

When Chains Wear Out

CITY drivers usually look upon tire chains as necessities of the winter only. Snow, sleet, ice and slush are the conditions that prompt them to apply chains. Some of the large taxicab companies, however, with due regard for the ultimate factor of safety, make it a rule to use chains the year round whenever the streets are wet. On country roads that are not hard surfaced, chains are almost a necessity after a rain.

A long, hard winter in much of the middle west, with constant snow and ice on the streets, has resulted in the wearing out of thousands of pairs of chains. In the early days of March the clank, clank of broken cross pieces was an accompaniment of the progress of almost every car through the streets of Chicago and other cities. The useful life of many sets of chains has come to an end and when the car owners hit the country roads in the spring they will be ready prospects for new chains. Sell 'em.

Where Does the Gas Pump Belong?

A GREAT many automotive dealers have gasoline pumps at the curb in front of their places of business. In some cities, however, they are not permitted to place pumps there. The argument against them is that they cause obstruction of traffic and that no one should be permitted to use the street for the conduct of a private business. One of the large manufacturers of gasoline pumps has issued a booklet giving arguments in refutation of charges made against the curb pump. These arguments are summarized as follows:

First, when gasoline is served from a pump located at the curb there is no danger to passing pedestrians. The automobile doesn't have to cross the curb and sidewalk twice.

Second, the automobilist runs no risk from other traffic. He simply swings his car in close to the curb, gets his gasoline and then quickly drives on without having to turn directly across traffic or in any way obstructing or interfering with other cars.

Third, when gasoline is served from a pump located at the curb the underground storage tank can be so located that tank wagon deliveries are made directly from the street.

Fourth, less time is needed by the motorist.

These arguments were not intended to reflect in any way upon the usefulness or desirability of drive-in filling stations, but merely to show that there is a legitimate reason for curb pumps.

Courtesy Again

THE other day we walked into the shop of a dealer friend—this we do not often do, for as a rule this man can be found in his office or on the sales floor, but seldom in the shop. The detail of the shop he leaves to his service manager, a very capable man in all except one qualification. The dealer was "having it out" with a customer, apparently, so we kept our distance.

When the customer left the dealer walked over to us with the comment, "Harry is a good fellow but he doesn't know how to handle people—he just got himself into the awfulest mess with that man because he didn't know how to be courteous. A simple matter, but one which Harry did not grasp."

The dealer pointed to a sign which hung over the shop entrance, "We want you satisfied," was all it said. "You see," he went on, "when people read signs like that they rather think you mean it and then when they run in with a simple complaint like this one and don't get satisfaction or courteous treatment, they naturally feel bad."

"The whole thing was a small adjustment which wasn't on us at all, but if Harry had attended to it in the first place with a smile, he would have saved half the time he spent arguing with the man and made a satisfied customer as well. It's really a good idea to look at both sides of things in a case like that and I wish you would write something in your magazine that I could show Harry, and maybe others would benefit by it, too, when they would consider it a 'bawling out' if it came from the 'boss'."

349,141 Is Total Output for February

First Two Months' Production Is Greater Than a Year Ago

Output of Trucks in February Is Best Mark Reached Since June, 1923

NEW YORK, March 10.—With a production of 349,141 automobiles and motor trucks in February, the first two months of the year show an aggregate output of 665,234 as compared with 520,473 and 213,793 in the same period in 1923 and 1922 respectively. For the first quarter of last year total production amounted to 875,503, a figure that will be surpassed easily this year.

February's high mark was established in the face of a short working month, during which a record daily average of 15,180 was made. This is one indication of the exceptionally high level at which the industry operated during the month.

Of the total February output, it is estimated that truck production exceeded 31,000 which is the best mark reached since June of last year. Reports show that truck demand is steadily increasing, augmented to a considerable extent by the growing use of motor buses, a branch of truck operations.

March has started in with car producers operating on schedules somewhat higher than those followed during the earlier months of the year. Despite this, however, there is no tendency on the part of the industry to overflow the market. From now until spring buying is well under way conditions in the sales field will be more closely studied to determine to what degree the buying public can absorb the output.

Reports from distributing centers point to an insistent demand for cars, deliveries in most instances being called for this month or next. This is evident in some districts where buying has been retarded because of local conditions. Shows continue to play an important part in determining public interest and almost without exception are drawing good crowds and developing buyers.

Producers are not being handicapped in their operations through a shortage of material or because of other factors entering into the production end. Shipments of finished products are going forward without interruption. While all means of shipping cars have increased, the greatest gain has been in the use of railroads for moving cars from factories to distributing areas. This method of transportation has proved very satisfactory. Carload shipments of cars and trucks in February amounted to 49,219 as against 43,000 in January.

An increase in the number of drive-aways is expected this month and beginning with April it is likely that a greater number of shipments will be made by boat, although heaviest ship-

ments by this means will not be made until May with a gradual increase from then until September.

The parts branch of the industry is continuing in a strong position, with operations at a high point and collections remaining on a satisfactory basis.

DODGE PRODUCES IN CANADA

DETROIT, March 7.—First cars are now being turned out by Dodge Brothers in the new manufacturing plant at Walkerville, Ont., which during the present year is expected to reach a scale of production large enough to meet the requirements of the Canadian market and of all export shipments to Great Britain and British possessions other than Australia.

Under the new manufacturing program the company will be in position to sell its cars in Canada at a lower price than has formerly been the case, due to tariff considerations. With the additional advantage of presenting to the home market a Canadian built product it looks for a greatly increased business, not only in Canada but in all British colonies.

URGES QUICK BUYING

DETROIT, March 6.—In the opinion of J. Dallas Dort, president of the Dort Motor Car Company, Flint, Mich., the public will make no mistake in buying its cars immediately as there never has been a time when such outstanding values were offered.

Mr. Dort, in a statement made this week said, "Prices on nearly all materials entering into the construction of motor cars are on the upward trend. There have been some quite notable advances within the last sixty days, so that motor car manufacturers, especially of popular priced cars, are justified in raising prices on certain of their models, if not on all of them."

"Some manufacturers have already raised their prices and it would be perfectly logical for many others to do the same thing."

So far Dort prices have not advanced.

ALTOONA RACE SEPT. 1

NEW YORK, March 10.—The speedway at Altoona, Pa., has been awarded the Labor Day date by the Contest Board of the American Automobile Association. This is Altoona's second date this year, the other being June 14, the next on the circuit to the 500 mile race at Indianapolis on May 30.

REGRINDERS TO MEET

OMAHA, Nebr., March 8.—The Midwest Re-Grinders Association will meet at the Hotel Rome here March 20 and 21. Subjects devoted to the improvement of conditions prevailing in the motor regrinding and rebuilding business will be discussed.

Seek to Oust Oil Companies From Business in Nebraska

Quo Warranto Proceedings Are Instituted Against Standard and Sinclair by Attorney General

OMAHA, March 10.—Quo warranto suits have been filed by Attorney General Spillman against fifteen oil companies, headed by the Standard and Sinclair interests, the first gun in the fight started to oust these concerns from this State. If the State wins its suit it will order eight of these companies, which are national concerns, to cease doing business in Nebraska, while the other seven, Nebraska corporations, will go into the hands of trustees and their properties sold.

All of this has come about through the efforts of the city of Omaha to hold down gasoline prices. Last summer the city bought a number of tank carloads of gasoline direct from refineries in Kansas, Oklahoma and Texas and put the fuel on sale at fire engine stations at five cents a gallon under filling station prices. When this supply was exhausted and the city attempted to replenish its stock, it was unable to do so, even at refineries which sold the original supply. Since then the state's attorney has been seeking evidence of a combine and the suit has been started under the Nebraska anti-combination law, which has been held constitutional by the higher courts.

WANTS WELDING PLANT

CLEVELAND, March 6.—Andrew Squire, lawyer of this city, has bid \$550,000 for the Standard Welding Co. plant of the Standard Parts Co. and the probabilities are that it will be sold March 15 to Mr. Squire.

Sale of this plant will bring up the amount paid to creditors to approximately 75 per cent. The creditors of the Standard Parts thus far have received 68.5 per cent.

The Standard Welding Co.'s property consists of eight acres of land between West Seventy-third and West Seventy-sixth streets adjoining the New York Central tracks. It is improved with a building having a floor area of between 400,000 and 500,000 square feet.

Others desiring to bid on this property have until March 15 to submit their offers.

CORRECTION

In an advertisement in the Feb. 28 issue of MOTOR AGE an error occurred in listing the price of the Bethlehem De Luxe radiator cap for Ford, Gray and other models. The correct price of this cap is \$3.75 instead of \$3.50 as listed in the advertisement.

Excise Tax Repeal Fight Is Carried to Senate Committee

Hearings Are Expected to Begin Latter Part of March and Last Three Weeks

WASHINGTON, March 5.—The first move in the fight in the Senate for the repeal of the excise taxes on automobiles and other general provisions in the administration's tax bill will be taken up tomorrow by the Senate Finance Committee which holds its initial meeting. The bill itself will not be taken up, but the Committee will confer with administration leaders as to the time when hearings will be begun. Indications were that this would be the last week in March and that the hearings would last for probably three weeks.

Just what the Senate holds in store for the automobile industry is, of course, problematical, but Congressman Clancy, of Michigan, sponsor of the three bills and who initiated the fight in the House which resulted in a \$25,000,000 reduction on automotive parts and light trucks when the bill passed the House last week, declared that it was his belief that this sum would be made even more in the Senate.

"I have got an expression from twelve senators, three of whom are those who have introduced bills in the Senate similar to those introduced in the House by me, and the work that automobile manufacturers, users, dealers and allied industries, did in the House fight, is having its effect now on the Senate.

"It would not be at all surprising to me to see the Senate Finance Committee recommend a reduction of the entire item of \$40,000,000 on parts and leave the tax on trucks as it is today. This would, in effect, mean an increase of \$15,000,000, over and above the \$25,000,000 cut adopted by the House."

The entire case of the automobile industry's fight on the "nuisance tax" and other automobile taxes was summed up by Mr. Clancy in a six page extension of remarks in the Congressional Record and 2,000 copies of this are being sent out by the Washington office of the National Automobile Chamber of Commerce.

Additional copies are being sent to each member of the Senate and copies are to be sent by the various automotive associations to its membership, with an appeal that there be no let up in the fight until the Senate has actually passed the measure providing some relief for the automobile user.

Representatives of the industry conferred in New York this week in the headquarters of the National Automobile Chamber of Commerce and are marshaling their forces for a repetition of the drive made on the House, when the measure comes up before the Senate Finance Committee and on the floor of the Senate.

Arrangements are now being made,

Mr. Clancy states, for representatives from all of the automotive trade associations, the A. A. A. and other organizations to testify before the Senate Finance Committee on the automobile excise tax repeal. Mr. Clancy, himself, will testify. Based on his personal canvass of twelve senators Mr. Clancy declares that the Senate is decidedly more sympathetic with the cause of the automobile industry than the House.

One of the factors, just coming into the horizon, which may mitigate against more liberal cuts for the automobile industry is the bill for \$330,000,000 for federal aid-highways, hearings on which begin on March 10. Much of the argument against any large cut in automobile taxes, before the House Ways and Means Committee, was that the automobile is the chief user of roads and should therefore be made to bear the chief burden of its construction.

"Were it not for this factor," Mr. Clancy declares, "I feel confident that the repeal of the parts and accessories taxes as well as the entire tax on trucks, would be removed without question by the Senate."

Star Raises Prices on Its Roadster and Phaeton Models

NEW YORK, March 10.—Star Motors announces an advance of \$50 on its roadster and phaeton models. The new price is \$545 and as the list on the closed models is unchanged, it reduces the differential between the two types of models. The Star list now is as follows:

	Old Price	New Price
Roadster	\$495	\$545
Phaeton	495	545
Sport phaeton	640	640
2-passenger coupe	640	640
Sedan	785	785
Sport sedan	935	935

TENN. RURAL TRADE BIG

KNOXVILLE, Tenn., March 6.—Studebaker dealers of the east Tennessee territory, attending a recent sales conference with the Cherokee Motor Co., of Knoxville, Studebaker distributors in the territory, stated that sales to rural trade this season have been the best in the history of the automotive industry, and that the 1924 outlook portends a 20 to 25 per cent increase in sales over last year. A majority of the dealers present stated they enjoyed, in 1923, the largest sales volume they had ever experienced.

Maxwell Motors Increases Its Prices From \$10 to \$80

Company Announces Advance on the Club Coupe and Standard Phaeton; Chrysler Unchanged

DETROIT, March 10.—Price advances ranging from \$10 on the club coupe to \$80 on the standard phaeton have been made by the Maxwell Motor Corp. No change was made in the list of the standard sedan and coupe, while the Chrysler prices also remain the same.

The list now is as follows:

	Old Price	New Price
Standard phaeton	\$795	\$875
Sport phaeton	975	1045
Club sedan	1045	1075
Club coupe	985	995
Standard coupe	1195	1195
Standard sedan	1295	1295

It also is announced that Maxwell sales in January and February totaled 6,369, an increase of 25 per cent over the 1923 period, while it is expected that billings in March will exceed 5,000 cars and may reach 7,000.

The 1,000th Chrysler was turned out March 6, while the March schedule calls for 2,000 or at the rate of 100 a day for the greater part of the month.

LONDON SHOW OCT. 16

WASHINGTON, March 6.—The date of the annual international automobile exhibition in London has been advanced from the latter part of November to Oct. 16-25. This change was made, the Automotive Division of the U. S. Department of Commerce has been advised, in the hope that car purchasers would not hold back in the placing of their orders until so late in the year. It is also expected that the earlier car showing will give the manufacturers an earlier start on their manufacturing programs for the following year.

NEW HAYNES ADV. MANAGER

KOKOMO, Ind., March 7.—Fred S. Tuerk has been appointed advertising and sales promotion manager of The Haynes Automobile Company. For several years he was connected with the advertising and sales department of the Goodrich Company at Akron, Ohio.

"The biggest thing in automobile advertising is merchandising," Mr. Tuerk says.

NEXT WEEK

At this time of year many dealers and maintenance shop proprietors already see that the summer's business is going to be more than their present facilities can care for. Some are making plans to erect new buildings at once. Others contemplate enlarging or remodeling existing structures. In the minds of still others the building problem is being studied with an eye to the future, but without any definite building plans at this time. An article in the next issue of MOTOR AGE will give a comprehensive survey of building possibilities for automotive purposes. This article will be written

By TOM WILDER

Chevrolet to Run School for All Dealer Help Selling Car

Plan Is to Teach How to Get Maximum Results Out of Each Territory

DETROIT, Mich., March 7.—Chevrolet Motor Co. has undertaken a widespread campaign of retail salesman education which is intended to teach dealers and salesmen how to get maximum business results out of their respective territories. The step is taken in recognition of the need for more trained salesmen and is designed to not only make many more men available as salesmen to Chevrolet dealers but to teach those already selling the line how to get best results under the direction of C. E. Dawson, general sales executive of the company.

Two new divisions of the sales department have been organized: the first, the retail development division, will be under the direction of A. R. Kroh; the other, the educational division, under the direction of C. W. Santee. Both of these men are widely known in the industry through their connection with sales promotion work for Goodyear Tire and Rubber Co.

Mr. Kroh's work will continue along the line in which he is best known as a public speaker along inspirational and sales promotion lines with particular reference to the development of Chevrolet retail sales. He will organize a force to extend this work to all of the 7,000 Chevrolet dealers and their retail selling organizations. Mr. Santee, as head of the educational division, will carry out the company's policy of building up its distributive program through education and information of retail salesmen, service men, dealers and the wholesale organization of the Chevrolet Company. This work will be carried out by means of printed and illustrated correspondence courses prepared especially by the Chevrolet Company for its own use.

It will be further carried out by means of fully equipped service schools maintained at all assembly plants and at Detroit headquarters and by the use of Educational Motion Pictures. Local meetings addressed by members of Mr. Kroh's organization and by members of the factory organization present the means of setting the educational work actively into operation enrollment blanks in the correspondence course will be mailed at once to all Chevrolet dealers to be passed out to their salesmen and to men who are seeking to become salesmen. Fully fifty per cent more men are expected to be enrolled in the course than are now selling Chevrolets, and as these men are given diplomas they will be taken on as salesmen, adding that many more immediately to the retail organizations.

The course covers fifteen parts and will take about eight weeks to complete. Salesmen and others taking the course will pay \$5. It is expected that a large

umber of Chevrolet dealers will offer to refund this money as soon as the salesman receives his diploma, but the company will not permit the dealer to pay in advance for the course, as it is considered important to have the salesman have an actual investment in the course.

The parts into which the course has been divided are as follows:

Why study this course, principles of selling, the market for automotive transportation, how a Chevrolet operates, general selling points of the Chevrolet, Chevrolet passenger models, analyzing the Chevrolet commercial market, Chevrolet advertising, organizing selling effort, how purchases are financed, closing sales, what is back of Chevrolet, how to earn big commission.

A. F. MCCREA JOINS VELIE

MOLINE, Ill., March 8.—A. F. McCrea, Detroit, formerly with the Brotherton advertising agency in that city, has been made advertising manager of the Velie Motors Corporation, Moline, Ill., succeeding Henry T. Wheelock. He has had wide experience in the automobile publicity line, his agency handling the Ford Motor, Lincoln Motor and Oliver Chilled Plow accounts. He is a former New England and Washington, D. C., newspaper man.

Notable increases in Velie shipments were recorded in February and the department reports show an increase of 90 per cent over the February, 1923, report, while the March schedule indicates another record increase with indications that the first six months of the year will show a great gain.

DRY LAW AS SALES AID

PHILADELPHIA, March 6.—That the "dry" law aids sales of motor cars was the assertion of A. E. Duncan, of Baltimore, head of a finance corporation, speaking at a dinner of the Philadelphia Chapter of the American Institute of Banking, at the Bellevue-Stratford Hotel.

"The large sale of automobiles throughout the United States is due to prohibition," he said. "The people are saving money they used to spend on liquor and are putting it into automobiles, buying them either outright, or on the installment plan. The average man is saving more, as well as buying an automobile. In 1912, the savings accounts in this country were \$8,000,000,000 and in 1922, \$17,000,000,000."

REORGANIZE TRUCK CO.

ELMIRA, N. Y., March 6.—There has been a reorganization of the Ward La France Truck Corp., Ward La France, formerly connected with the La France Truck Corp., becoming president and Joseph G. Grossman, president of the Fayette Motors Corp., the Metropolitan distributor of the truck, secretary and treasurer. They will continue the manufacture and sale of the Ward La France trucks, which will be made in three models—2B, 2½ to 3½ ton; 4A, 3½ to 5 ton; and 5A, 5 to 7 ton. Prices have not as yet been announced.

European Type Ford Announced in Paris

PARIS, Feb. 25 (By Mail).—Public announcement was made this week of the European type Ford, as assembled at the Bordeaux factory for the French market. The modifications are a lower center of gravity, a higher and bigger nickelled radiator, new running boards covered with linoleum and bordered with aluminum, a slip-on cover for the top, deeper and more inclined back rests, and a new carburetor declared to give 24 miles to the American gallon. With electric lighting and starting and detachable rims the Ford pheasant is now listed at 13,200 francs, this making it the lowest priced four-passenger car on the French market.

AGAINST WIDE DISCOUNTS

CHICAGO, March 7.—Too wide a spread in the discounts for small and large quantity purchases allowed to jobbers by manufacturers must inevitably lead to price cutting and the "gyp," according to Price M. Davis, general manager of the Shadbolt & Boyd Iron Co., Milwaukee, Wis., who addressed the Automotive Manufacturers Association at the Hardware Club here tonight. The speaker expressed the opinion that the spread should not be more than 10 per cent. He emphasized the importance of knowing what it is costing one to do business, and intimated that some business men do not appear to know just what items go to make up overhead. He urged manufacturers to sell only to reputable and reliable jobbers.

E. T. Harris, president of the Payson Mfg. Co., Chicago, spoke of some of the problems that confront the manufacturer in carrying on his business, and urged a closer cooperation between manufacturer and jobber in solving the difficulties in which there is a mutual interest. He said that the jobber is constantly calling on the manufacturer for concessions in the way of service without an adequate appreciation of manufacturing conditions.

The problem of resale prices and discounts has been a hard one for the automotive manufacturers and jobbers, and these speakers were therefore invited to give to the Automotive Manufacturers Association the benefit of their experience in the hardware industry.

GEN. MOTORS SALES GAIN

NEW YORK, March 6.—General Motors sales in February totaled more than 80,000, according to the corporation's announcement today. This compares with 60,959 in January and with 55,427 in February, 1923. The mark the General Motors units are shooting this month is 71,669, made in March of last year. This report includes Buick, Cadillac, Chevrolet, Oakland, Oldsmobile and GMC truck, the figures being preliminary ones.

Olds Motor Works to Handle Certified Accessory Line

Will Include Conventional Units
Priced at a Flat Figure Over
Entire Country

DETROIT, March 10.—A line of certified accessories is now being handled by the Olds Motor Works of Lansing, Mich. In accordance with a similar service parts policy these accessories which include all of the conventional units are priced at a flat figure over the entire country, the freight and war tax charges having been absorbed. It is also planned to cover the installation of any of these accessories by a flat rate charge such as is used in all Olds service operations. All of the accessories which are included in the line are now standard equipment on the Olds sport touring model and have been adopted after tests which insured their merit. Each of these units is shipped from the factory where it has undergone a regular inspection routine in the same manner as the more usual mechanical parts of the car. In addition to these features, all cars are shipped with the necessary mounting facilities so that the accessory becomes an integral part of the car as it is installed. This provision also makes for reduced installation outlay and time requirements.

Included among the certified accessories are the following, with their respective prices.

Bumpers, front, \$15; rear standard bumper, \$15; rear sport bumper, \$15; bar handle radiator cap, \$2.50; road spot light, \$5; windshield cleaner, \$1.25; rear view mirror, \$1.75; step plates, \$4.75 per pair; steel enamelled trunk, \$25; trunk platform, \$7; trunk rails, \$6.80 per set of four; windshield wings, \$17 per pair; sport tire carrier assembly, \$7.50.

It is stated that these prices plus the flat rate installation charge will bring the total cost well below the usual market price with the added advantage of integral characteristics.

WILLYS PRODUCES 22,048

TOLEDO, March 7.—Willys-Overland January production was 22,048 cars, amounting to a net volume of \$17,638,400. This record is more than twice as great as the production mark of a year ago, which saw Willys-Overland started for its peak year of more than 200,000 cars. It expects to produce 300,000 Willys-Knights and Overlands in 1924.

Of the 22,048 cars produced during last January, 15,500 were Overlands and 6,500 were Willys-Knights, a new record for Willys-Knight production.

H. W. BURRITT PROMOTED

DETROIT, March 4.—Henry W. Burritt, secretary and treasurer of the Gray Motor Corp., also has been made general manager, succeeding W. N. McMunn, who has resigned. Mr. Burritt became identified with the Ford Motor Co. in 1906 and when he resigned in 1921 he was in charge of Ford tax matters all over the world. He joined Gray in 1922.

CUT DOWN ACCIDENTS

BOSTON, March 5.—The report on highway accidents for the fiscal year, issued by Frank R. Goodwin, registrar of motor vehicles, shows that seventeen Massachusetts cities lowered their traffic mortality totals in 1923. Though the State as a whole had a larger traffic toll over 1922, the total increase was 11 per cent as compared with a 25 per cent larger volume of motor vehicles. Furthermore, the year's roster of 578 was under the total of 582 in 1919. There was one death to 644 vehicles in 1920 and one to 998 in 1923.

Of 550 fatalities analyzed, the pedestrian was at fault in 21 per cent of the cases. Forty per cent of the accidents were due to speeding too fast for conditions, while of 550 fatal accident cases involving 617 drivers, 322 or over 50 per cent, were paid operators.

One City Driver at Safety Lectures

SPRINGFIELD, Mass., March 7.—A few nights ago the mayor was asked to award the certificates to the motor drivers, who had attended the series of free lectures given by the Safe Roads Federation with a view of preventing accidents. When the mayor learned about the object of the lectures he asked how many of the employees driving municipal motor vehicles had attended the course. He was told that one city employee did. The city has some 40 drivers. When the city employee came up to get his certificate the Mayor said:

"Young man, for your interest in the welfare of the city's interests I am going to promote you as an example for your fellows to follow. Come to my office at 10 tomorrow."

DUPLEX TO GO AHEAD

DETROIT, March 6.—Duplex Truck Co. will start manufacturing in its new plant at Lansing without the necessity for re-financing, said Joseph Gerson, president, at the annual meeting of the company. Sale of its former plant to Reo Motor Car Co. for \$200,000 will enable Duplex to pay off its bank indebtedness, he said. This amounts to \$169,199.94. The company has a cash balance of \$30,000 and lists in its assets \$85,759.88 in notes receivable and \$89,504.30 in accounts receivable. There is also an inventory of \$240,569.64 taken at market valuations.

Beside the bank indebtedness the company owes \$13,779.14 in accounts payable and other items of accrued taxes and payrolls approximating \$2,500. The company will therefore be in position to resume manufacturing without additional capital, Mr. Gerson said, as soon as its new building is ready.

Orders for 30 trucks were turned in by Harry M. Lee, former president and general manager, who is now in charge of sales. Mr. Lee obtained these orders on a recent two months trip through the east.

Detroit Car Deliveries in February Show Total of 4,585

This Compares With 4,194 in January
and 3,060 for Second
Month Last Year

DETROIT, March 5.—Cars delivered in Detroit in February totalled 4,585 which compares with a total of 4,194 in January and of 3,060 in February last year, according to the regular monthly service of the Detroit Automobile Dealers Association. Truck deliveries of 526 represented a falling off for January of 24 but a gain of 140 over the same month last year. There were 14 tractors delivered, 7 Ford and 7 Mack. Ford deliveries in the month were 2,259, about 90 fewer than in January. Closed cars made up two thirds of the deliveries. Chevrolet deliveries were 424, Overland 88, Star 71, Gray 7. Hudson-Essex delivered 290, Studebaker 221, Dodge 186, Buick 180, Maxwell 117, Oakland 92, Jewett 78, Olds 68, Rickenbacker 62, Hupp, 61, Willys-Knight 52, Nash 49, Reo 27, Flint 26.

In the higher priced lines Cadillac delivered 48, Packard 22, Paige 20, Lincoln 10, Jordan 9, Peerless 7, Sterling 5, Wills Sainte Claire and Marmon 4 each. In the total deliveries closed cars aggregated 65 per cent. In every price class closed cars predominated, the ratio in the higher priced lines being four to one.

Fords comprised 331 of the truck total, Chevrolet had 29, Reo 22, Federal 21, Gotfredson 18, Dodge 14, GMC 14, Mack 12 and International 10.

TO RAISE TIRE OUTPUT

INDIANAPOLIS, March 6.—The C. & J. Tire Company, a local factory unit of the U. S. Tire Company, is planning for a considerable increase in its output for 1924, according to reports made this week. The local plant makes tubes, motorcycle tire tubes and casings and tire repair materials. It is said that a fifty per cent increased production over last year will be made if the present motoring and bicycle season opens up as expected. Beside the automobile tire tubes made for U. S. Tires in the local plant from 2,000 to 3,000 bicycle tires are made daily.

OVERLAND SERVICE PLAN

CHICAGO, March 6.—Willys-Overland branch here has undertaken to keep either passenger or commercial cars bought during March or April in good running condition for one year for 10 cents a day. This does not include tires, or batteries and speedometers, which are guaranteed by their manufacturers; nor does it cover damage caused by wrecks or collisions. Parts replacement, however, is a part of the contract. This plan is optional with the purchaser, as it is declared that the upkeep the first year in many cases runs below 10 cents a day.

Car Buyers Prosperous, Make Increased Payments of Cash

Initial Amounts In Many Cases More Than Are Required by Finance Companies

CHICAGO, March 6.—A possible indication that a greater percentage of car buyers are paying cash rather than taking advantage of the partial payment plan is reflected in an examination of the number of chattel mortgages recorded on automobiles during February as compared with the corresponding month in 1923. It is certain that many who are buying on deferred payments are paying more cash down than is required by the finance companies, and the heavy spring demand for cars in the medium price class and in some instances those selling for \$2,000 is regarded by many as evidence of the fundamental prosperity of the nation.

The reduction in the number of mortgages recorded in February was confined to the last two weeks of the month when the weather moderated and buyers came out in increased numbers. For the weeks ending Feb. 16 and 23 the number of chattel mortgages recorded was 554 and 444, which compare with 621 and 572 for the same weeks a year ago. January also showed a fewer number recorded for every week except the first.

While the recording of chattel mortgages on cars is not a strictly accurate guide to the sales trend, for the reason that not all of them are placed on record, it indicates the movement in a general way. An examination of the weekly figures shows low marks reached during the winter months, accompanied by increases with the approach of spring and the touring season, followed by a falling off during the fall months and the periods preceding the holding of the na-

tional shows when the public is waiting for new models to be announced. The following table shows the figures for each week of 1923 and two months of 1924:

1923			
Week ending		Week ending	
January 6.....	397	April 7.....	796
January 13.....	534	April 14.....	1,069
January 20.....	485	April 21.....	884
January 27.....	466	April 28.....	1,082
February 3.....	451	May 5.....	953
February 10.....	540	May 12.....	940
February 17.....	621	May 19.....	882
February 24.....	572	May 26.....	656
March 3.....	761	June 2.....	618
March 10.....	751	June 9.....	686
March 17.....	772	June 16.....	767
March 24.....	751	June 23.....	694
March 31.....	1,005	June 30.....	812
July 7.....	749	October 6.....	405
July 14.....	960	October 13.....	498
July 21.....	777	October 20.....	529
July 28.....	866	October 27.....	437
August 4.....	725	November 3.....	559
August 11.....	364	November 10.....	681
August 18.....	716	November 17.....	581
August 25.....	723	November 24.....	693
September 1.....	471	December 1.....	492
September 8.....	450	December 8.....	568
September 15.....	570	December 15.....	600
September 22.....	606	December 22.....	534
September 29.....	622	December 29.....	530

1924			
Week ending		Week ending	
January 5.....	602	February 2.....	503
January 12.....	467	February 9.....	564
January 19.....	453	February 16.....	554
January 26.....	417	February 23.....	444

The low mark for this period was reached for the week ending Aug. 11, 1923, with 364, and the high figure was registered for the week ending April 28, with 1,082. These figures were obtained from the Central Automobile Financing Association, Chicago.

TO FIX ACCIDENT BLAME

WASHINGTON, March 7.—Following a conference with members of the National Press Club, the American Automobile Association has decided to follow the example of the National Automobile Chamber of Commerce in asking the newspapers to co-operate in reducing the number of automobile accidents.

Indianapolis Show Greeted, With a Record Attendance

Outdoes Previous Exhibitions From Standpoint of Setting Off Cars on Display

INDIANAPOLIS, March 5.—The spring automobile show given by the Indianapolis Automobile Trade Association which opened the first of the week bids fair to break all records on attendance and on sales made and prospects gained. The first night of the show, Monday of this week, proved an attendance maker in spite of the fact that the first night here is not given over to pass holders. There are no such individuals. Dealers buy many tickets and give them to prospects, but every admission ticket except those issued to the press and a very small crowd of "prominent citizens" represents spot cash. The second day brought the expected rain storm which generally opens the show, but in spite of that almost 10,000 paid their way into the show last night. Wednesday brought real spring, and the number of out-of-town visitors began to assume real proportions.

Sales have already begun to register themselves at many of the exhibits and every dealer interviewed so far has lists of live prospects that each claims is better than any previous list gathered at a spring show. The out-of-town dealers are here in force and many dealer contracts will be closed during the week.

As a spectacle this spring show outdoes all previous affairs in this city from the standpoint of setting off the cars to best advantage and showing them in a very close approximation to spring atmosphere. All pillars, posts, railings and walls of the show are hidden with spatter-work hangings in soft spring colors, and the over-head iron work is hidden by a vine colored trellis which has a beauty of its own. Indications point to a larger March sales record for the state than that of last year which set a very high mark.

BAKER FINISHES RUN

LOS ANGELES, Calif., Feb. 26.—"Canon Ball" Baker, driving a stock Gardner Sedan, arrived here at 4:30 p. m., today from New York City, finishing his trans-continental midwinter endurance run in total elapsed time of seven days, 17 hours and 8 minutes; the total running time was four days, 14 hours and 15 minutes. Bad road conditions were encountered in the trip and 1,396 miles were made on chains. The total distance covered was 3,398 miles.

NO MORE FREE SERVICE

BLOOMINGTON, Ill., March 6.—Battery service firms of this city have cut out all free service. Nine of the leading concerns have agreed to this, effective March 1. A charge of fifteen cents for testing and filling batteries with water and twenty-five cents for the cleaning of terminals will be made.

Indianapolis Show View



Trade Centers Face Big Spring Demand

NEW YORK, March 5.—Retail sales are keeping up with production, directors of the National Automobile Chamber of Commerce discovered today at their monthly meeting when they were informed that estimated production of cars and trucks for February was 349,141. At the same time reports came in from various sections of the country on selling conditions which were discovered to be most favorable.

These reports showed that last month retail sales in New England and the Middle Atlantic States were larger than February, 1923, but smaller in the middle west and west. The scouts see only good times ahead in the immediate future, for they state they expect bigger sales during March, April and May this year than in the same period in 1923. They qualify this a bit, though, in saying that conditions in the southwest are relatively less satisfactory. Stocks of new cars are the same to slightly larger in comparison with last year, while used car inventories are generally smaller in the east and larger in the middle west and west.

Time payments, it is reported, are increasing but this is attributed to increased sales volume. Deferred payments are more frequent on used cars than on new ones, but this, however, is largely seasonal.

These trade reports are particularly favorable to the truck business, a steady improvement being shown. Sales of light commercial vehicles in New England, Pennsylvania and Ohio are much heavier than last year, while the market for heavy trucks is reported to be excellent in Illinois, Wisconsin, Ohio and Pennsylvania. Especially good business in trucks is predicted for the next three months.

To Expedite Deliveries in March

DETROIT, March 7.—Detroit dealers are looking to March to open up spring deliveries, not sales, for sales have been good since the first of the year, but weather conditions have tied up practically all deliveries and dealers have not begun to move their winter stocks. There is no doubt anywhere but that spring sales will compare with and probably exceed any season that has gone before but the fact remains that deliveries in this section have been slow up to now.

Dealers are in good shape with regard to used cars. Stocks are low and have been found readily movable at low prices. The increases in the new car prices in the past month have helped make used cars attractive, dealers report, and have made it possible to get better prices than would otherwise have been the case.

An unusual and unlooked for resistance to sales is reported by some dealers as being due to balloon tires and tire companies are coming in for some criticism for featuring balloon tires adver-

tising at a time when most car manufacturers are building cars whose wheel equipment does not permit of balloon tire use. As a result there is some tendency to disturb the buying movement.

Conditions throughout the state are reported as promising a large spring buying. Shows in all cities have been largely attended, despite storms which have been unusually severe. Much of the farmer attendance has been kept down for this reason, but nevertheless the farm element has been largely represented.

Los Angeles Dealers See Shortage

LOS ANGELES, March 6.—Dealers handling the most popular lines of cars claim undoubtedly there will be a shortage in spring deliveries. Comparatively few of the fast selling lines are represented in warehouse stocks. Even now deliveries on some models are delayed as much as thirty days. There seems to be practically no diminution in the demand. This has enabled some of the dealers to put a check on trade-ins in a way that could not be accomplished before. A few dealers positively refuse to accept trade-ins but offer to take the cars on consignment and sell them, permitting the amount received to be applied against the purchase of a new car. Disgruntled because of their inability to make what they regard as satisfactory trades, some owners prefer to retain their old cars, which is the nearest approach ever reached here to the plan of wearing out cars.

The used car market is only fairly brisk. There has been an increase in the number of replevins. Some dealers attribute this to the slump in the real estate market as many of the repossessed cars had been sold to real estate salesmen who now are unable to meet the payments.

Boston Sales Pick Up

BOSTON, March 5.—Motor car sales showed a bit of a slow-up during early February in the Boston territory, but they picked up in various outside sections. The dealers were wondering what caused it. However, some of them figured out that the contributory reasons were: first, so many people were busy making out their income taxes, state and national, that they were not bothering about buying. Again February is regarded as a dull month in general business here. Next it was believed that the realization of the Washington's Birthday open house would bring a complete line of cars to Boston caused many to wait, also there was so much publicity about the coming show it was believed it had a tendency to slow up sales.

However, the buying began around the holiday and it has continued since. The result is that the dealers enter March and the Spring months with greater anticipation of big business than ever. A

number of the larger dealers have cars stored, but many others have no very large stock so the latter will be outsold soon after show.

In the outside territories business has been good because there have been shows at Portland, Lawrence, Haverhill, New Bedford, Springfield and other cities, a regular series of them, and the sales were reported good everywhere.

Milwaukee Sales Brisk

MILWAUKEE, Wis., March 6.—Events during February, which was beset with the worst variety of extreme weather conditions known in Milwaukee and vicinity in years, served to confirm the hopes that retail trade in passenger cars in the early part of 1924 will be at least as good as ever before, and generally better. At the same time the development of the motorbus business, and a materially improved general business situation, gave rise to renewed hopes that commercial vehicle trade this year is going to outstrip that of any year outside of the wartime period.

At the beginning of March, the stocks of passenger cars in the hands of local dealers ranged anywhere from light to large. A number of dealers have been successful in accumulating a substantial number of new cars to meet spring demand, while others who furnished factories with shipping specifications along lines they believed would meet trade and their own financial condition have found that current sales were above forecasts, with the result that they are just about able to make prompt deliveries currently.

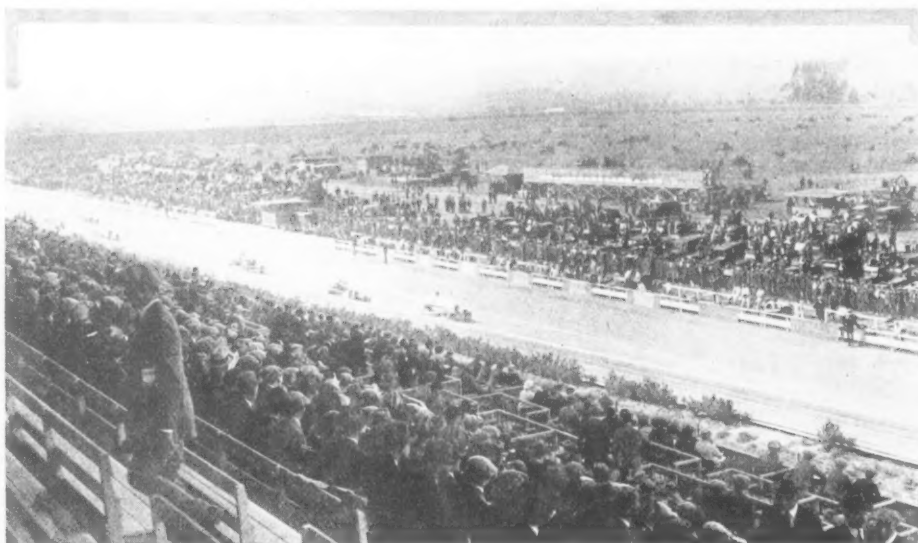
A note of optimism that has a substantial basis runs through the local dealer trade. In practically every instance the remark is made that winter business has been better than was looked for, and that measures taken to get an accumulation of cars fell short of demand as it has developed.

San Francisco Buying Heavy

SAN FRANCISCO, March 6.—February buying of cars was heavier than in any previous year, with prospects that sales in the San Francisco territory will set a new record for March. The three coast shows have been an important stimulus to buying, and the usual delay in buying, due to the desire to escape tax day in March, has not been in evidence this year. Dealers expect the influence of the shows to carry through March and April. They made more sales at the San Francisco show than ever before and also obtained more good prospects.

Few if any of the dealers have any amount of stock on hand, and a number are planning to go personally to the factories in March in an effort to obtain more cars. Used cars of the better grades, reconditioned by the dealers in each make, are in good demand. The wholesale situation is improving and dealers expect record business in next three months.

Five World's Records Broken



Harlan Fengler, the "Boy Wonder," driving his Miller-built Wade Special at an average speed of 116 m.p.h. for 250 miles, won the Washington Birthday classic at the Beverley Speedway in Los Angeles. He broke five world's records and drove the greatest race in the history of the track. The picture shows the cars coming down the stretch

Gasoline Prices to Dealers Are Lowered by Standard Oil

CHICAGO, March 6.—The Standard Oil Co. has announced a scale of lower gasoline prices to dealers. The new prices are as follows: One to 99 gallons, 18 cents; 100 to 250, 16 cents; 251 to 499, 15½ cents; 500 gallons up, 15¼ cents. Prices to the consumer at stations today remained 20 cents.

Officials of both the Standard and Sinclair companies deny that there is a price war impending.

NEW PISTON PIN PLANT

ST. LOUIS, March 7.—A new piston pin plant which will double the present output of the McQuay-Norris Manufacturing Company will be opened in Connersville, Ind., about April 1. Unprecedented activity in the piston and pin business has made the new plant imperative.

An expenditure of more than \$60,000 in building and equipment is under way and work is being rushed to a speedy conclusion. The present plant has been operating on a night and day basis for weeks to increase production sufficiently to take care of current piston and pin orders.

DEALERS ASK CITY TRADE

ATLANTA, Ga., March 6.—Dealers here plan a concerted fight against a recent contract awarded by the city for seventeen new automobiles to be purchased from a dealer at Marietta, Ga., for city use, the outside firm being favored by the Atlanta council due to the fact that it quoted a considerably larger allowance on used cars than did the Atlanta dealers. Automotive purchases by the city planned in the immediate future will total about \$50,000.

PAY LIBERTY CREDITORS

DETROIT, March 5.—Dividend checks to creditors of the Liberty Motor Car Co. have been mailed by the Security Trust Co., receiver. Secured claims totaling approximately \$400,000 have been paid in full. Creditors whose claims originated subsequent to January, 1922, were paid 98 1/5 per cent. General creditors whose claims did not fall in the preference under the creditors agreement received 17.3 per cent. Unsecured claims totaled about \$1,400,000.

A portion of the receivership funds is held under court order pending disposal of a government claim which is expected to be cancelled. This fund is small but will give preferred creditors about 100 per cent if made available.

MAKE BODIES AT LANSING

DETROIT, March 6.—The Fisher Body Corp. started operations this week in the new plant at the Olds Motors Works, Lansing. Production plans call for 250 closed bodies daily. A. J. Brandt is manager of the division, coming from the Janesville Fisher plant; Frank Wilson, superintendent of finishing and painting at the Olds factory, will supervise the same work in the Fisher plant. Olds will build its own open bodies.

TWO SHIFTS AT OLDS

LANSING, Mich., March 6.—Four departments of the Olds Motors Works have been placed on two shift operation. These are the engine plant, body assembly, sheet metal assembly and pressroom. Each shift will work nine hours, eliminating former overtime schedules. The production schedule is about four hundred daily.

Second Month of This Year Best Production February

Output of Cars and Trucks 349,141, a 26 Per cent Increase Over a Year Ago

NEW YORK, March 5.—Shipping figures compiled by the National Automobile Chamber of Commerce place February production of cars and trucks at 349,141 as compared with 316,093, the revised total for January. This is an increase of 10 per cent over January and 26 per cent over February, 1923, which had 276,934, but last year the February increase over January, 1923, was 26 per cent. This, however, does not rob this February of the honor of being the best production February ever had.

The most astonishing feature of this report is the record for daily production established, which is the best on the books of this great industry. With only twenty-three working days because of two holidays and four Sundays, the daily average was 15,180 cars and trucks. This is comparable with last May when the industry turned out 394,088 vehicles, which stands as the monthly production record, the daily average being 15,157.

Another record was broken in the month just ended, a new mark for rail shipments being established with 49,219 carloads as compared with 46,359 in January, this being the highest mark for any month in the history of the industry.

This fast pace is interpreted to mean that car manufacturers are making every effort to accumulate enough surplus for the big spring business which they feel awaits them as indicated by returns from the show circuit and by orders from their distributors and dealers. The comparatively mild winter has resulted in steady selling which has prevented the dealers stocking up, so that now the makers must travel at full speed to give their retailers cars enough when old winter departs.

The feeling of optimism as to the immediate future is shared with the car manufacturers by the equipment makers as is indicated by the statement issued by President G. Brewer Griffin following the monthly meeting of the directors of the Motor and Accessory Manufacturers last week in which he said:

There is nothing in the immediate situation to change the opinion expressed at the last board meeting. There is evident a certain amount of sensitiveness to the present political situation as indicated by the care with which commitments are made. The needs of the country, however, have not changed and a continuation of steady progress in the automotive industry seems probable.

MOVE TRACTOR SCHOOL

DETROIT, March 7.—Michigan State Automobile School, Detroit, has moved its tractor instruction department from the former location on Grand River Road to an acreage much closer in. This new acreage is on Tireman Road.

Manufacturers Mix Caution With Increased Schedules

**March, While It Will Show Gains, Is
Not Expected to Set New
High Marks**

DETROIT, March 6.—Schedules for March production show increases over the earlier months, but there is a tendency on the part of manufacturers to proceed cautiously and for that reason it is not likely that the month will set new high marks. With the exception of some manufacturers in the medium price field the general schedules are considerably lower than earlier year estimates would indicate.

In every instance manufacturers are agreed that business is very good and that sales throughout the country have been high and are continuing high. There is not much secret, however, to the fact that much of the selling has been for deliveries in this month and April so that dealer stocks are large and will not be depleted much until the month is well under way. Shipments from factories for that reason are necessarily slowed down.

Deliveries of material and parts in the early part of February were held up in some instances by weather conditions, and some manufacturers report continued difficulty in getting deliveries but in no case is this reported as serious. There are the usual day-to-day problems which all factories experience but there is no general condition which might be held responsible for keeping production marks low.

Ford schedules for March are for approximately 185,000 cars, which represents an increase of about 10,000 over February, but the schedule is still considerably below the high marks of last year. Chevrolet production in March will scale between 2,600 to 3,000 daily which will give it an increased total over February which is reported to exceed 50,000. The company was striving for 3,000 daily by March 1, but this figure probably will not be reached until toward the end of the month.

Dodge Brothers are aiming to reach a schedule of 1,000 daily by the end of the month, the present figure now being in excess of 900 daily. Buick is continuing at the 1,000 or better daily rate. Hudson-Essex schedules are for 650 a day, and Studebaker will manufacture at approximately 700 daily. Each of these schedules represents a higher figure than was reached at this time last year.

Maxwell schedules for March are for approximately 250 cars daily and it is hoped to bring Chrysler production to the 100 daily mark early in the month. Chrysler production is steadily mounting, rising from 25 daily at that start of February to close to the 100 daily mark at the present time. Paige-Jewett schedules for March are for 7,500 cars or approximately 300 daily which will represent an increase over February of about 1,900.

Hupp schedules for March are for 5,000 cars or about 200 daily. Shipments in February approximated 3,200. Oldsmobile is operating on a schedule of 400 daily and Oakland schedules are for approximately 300 daily, this mark being exceeded several days in February. Both of these plants will run considerably ahead of February output. Reo is continuing at 150 cars and speedwagons daily and will increase this total as it gets into operation in the former Duplex plant.

Cadillac continues to approximate the 100 daily mark which represents practically plant capacity. Packard schedules have been revised somewhat because of increased demand for the single-eight, though the six continues to dominate production. Rickenbacker has scheduled 1,800 cars for March or at the rate of 75 daily, which will be a 50 per cent increase over February. Dort schedules are for about 60 daily. Wills Ste. Claire has 600 cars scheduled for March, about 100 per cent more than February output.

The Durant plant at Lansing will operate on a schedule of about 400 cars daily, the Star being the large production vehicle. Gray schedules are for about 3,500 cars in March. Columbia was building about 15 daily when taken over by the new executives who plan to increase this schedule by a considerable figure during the month.

HOLD INDIVIDUAL SHOWS

CEDAR RAPIDS, Ia., March 8.—Unable to secure adequate facilities for an auto show, dealers in this city this week joined with the general merchants in "Open House" week and made it the occasion for a united spring car display. Twenty-six dealers showed the current models of 35 cars and their display rooms were crowded every afternoon and evening. There was a spirited rivalry in arrangement of show windows and display floors and dealers found a certain advantage in meeting visitors without the hub-bub of the big show floor and its attendant distractions.

The general attitude of the prospective buyer was to accept 1924 spring prices as bargain-figures. Last year the show visitors were talking summer-cuts in prices and exhibited a marked tendency to "see how things" turned out. This year he has taken the stability of the last few months as indication that prices are at rock bottom and indications that the spring will start off as a heavy buying year are everywhere evident.

BLOOMINGTON SHOW DRAWS

BLOOMINGTON, Ill., March 6.—The fifteenth annual show of the Bloomington Automotive Trade Association was held at the Coliseum on March 5, 6, 7 and 8. Twenty-three firms were represented and the show exceeded in beauty and wealth of exhibits any previous exhibit in this city. The Bloomington dealers feel that the results of the show will prove satisfactory and give the desired stimulant to the business of spring.

Court Holds Labor Bill Is Superior

WASHINGTON, March 6.—Bills for labor and material furnished by a garage-man or dealer take priority over a conditional bill of sale on an automobile, according to a decision of the United States Court of Appeals, reversing a judgment of the District of Columbia Municipal Court. The decision, in a federal court, will have national application.

In this particular case the Commercial Credit Company, assignee of a conditional bill of sale to an automobile purchaser, sought to recover an automobile which when found was undergoing some repairs in a local garage. The garage man had done a considerable amount of work on the car and had furnished numerous repair parts. His bill totaled \$203, which had been declared satisfactory with the automobile owner.

After the work had been practically finished the Credit Company seized the automobile for satisfaction of their conditional bill of sale. The garage man sought recovery of the car on the ground that he had a "constructive mechanic's lien on the machine." In the Municipal Court his case was dismissed, but on the appeal, he was upheld and the Credit Company was ordered to either pay the \$203 repair bill, which had been contracted by the purchaser, or return the car to the garage man until the bill had been paid.

FORM BOOSTERS' CLUB

NEW YORK, March 6.—Twenty-four New York members of the Boosters' Club, New England No. 1, have organized the Automotive Boosters' Club, No. 13, New York City. This was in accordance with the request of the parent organization, which deemed it essential that the New York members organize. Earl V. Hennecke, vice-president of the Moto-Meter Co., was elected president, H. B. Sullivan, Manley Manufacturing Co., vice-president, William Kandall secretary. The board of directors, in addition to the officers, consists of John H. Cooper, B. M. Asch, C. P. Shattuck, R. A. Crooker and J. C. McAdams.

S. A. E. TO SPRING LAKE

NEW YORK, March 6.—Spring Lake, N. J., has again been chosen for the summer meeting of the Society of Automotive Engineers. The sessions will be held June 24-27.

It has been definitely decided to hold the S. A. E. annual meeting in Detroit next January, while the motor transport session is scheduled for New York in May. A joint service meeting with the National Automobile Chamber of Commerce will be conducted in Cleveland Nov. 18-19, and the production meeting will be held in Detroit Oct. 21-24. An aeronautical gathering will be held in Dayton at the time of the Pulitzer race.

C. A. T. A. Elects 1924 Officers



Chicago Automobile Trade Association, at its annual meeting March 10, elected the following officers: From left to right, president, Henry Paulman, Pierce-Arrow; vice-president, Dayton Keith, Wills Ste. Claire; secretary, W. C. Auble, Durant and Star; treasurer, H. T. Hollingshead, Nash and Lafayette. All were reelected except Mr. Hollingshead, who succeeds W. J. Boone

Chevrolet Explains Position on Question of Price Boost

DETROIT, March 6.—C. E. Dawson, sales executive of Chevrolet Motor Co., has sent the following message to all dealers and associate dealers, defining the company's position on possible price increases:

"This question is being asked daily (are prices to increase?) by Chevrolet dealers who have noted price increases by various manufacturers.

"These increases appear to be caused by steadily rising cost of material.

"So far we have been able to offset our increased material cost by increased economies resulting from larger production. How long we can continue to do this we don't know.

"While we have every desire to hold the strong price position we now enjoy, no dealer is safe in assuming that we can do so indefinitely if material costs continue to rise.

"We, therefore, advise our dealers to urge all prospects as well as buyers who have made deposits against future deliveries to take their cars at once. They lose nothing by such action and may save money."

PLAN APPERSON OUTPUT

INDIANAPOLIS, March 6.—Announcement was made at Kokomo this week by Don C. McCord, who with Maurice L. Rothschild acquired control of Apperson almost a year ago, that arrangements to finance this year's production had been completed. Mr. McCord arrived from New York this week to assume active charge of the production and management of the company. It is claimed that the production budget outlined at a creditors' meeting last fall will be increased. At that time the minimum number of cars to be produced during the current year was set at about seven hundred. N. H. Van Sicklen, vice-presi-

dent and general manager, and Edgar Apperson, chief engineer, have been in western territory looking after company organization work and reports from their work and from other territory investigation in the east by McCord are said to indicate that the company has a very cheerful prospect for business this year.

PLAN ATLANTA SHOW BUILDING

ATLANTA, Ga., March 6.—Due to the unusual success of the Southern Automobile Show in Atlanta last month, the Atlanta Automobile Association is seriously considering plans for the construction of a large show building for next year's event, as it is planned to make a strong effort to have the Atlanta show declared a national event. Space at the Auditorium Armory this year was cramped, and there would have been approximately 15 to 20 per cent more exhibitors had there been space available.

With the show over a compilation of sales records by the various exhibitors, the association has announced, bring the total sales record to \$230,000, which includes only actual sales made by dealers on the floor during the progress of the show.

ACQUIRES ENGINE PLANT

PONTIAC, Mich., March 7.—Plans are being made by the Oakland Motor Car Co. to take over the engine plant of the Saginaw Products Co. at Saginaw for the production of parts of engines in case the Oakland engine plant here cannot supply all needed for the present heavy production schedule. It is not the intention of the Oakland company to manufacture cars at the Saginaw plant.

This proposed action has been brought about by the record-breaking production of Oakland cars so far this year, the February sales reported having broken all previous sales records for a single month. Sales for February exceeded the previous record month, June, 1919, by more than 100 cars. The figures show

a 300 per cent increase over February, 1923, and are more than 50 per cent greater than February, 1919, which was the previous record February for sales.

WANT GOOD WINDOW TRIMS

TOWSON, Md., March 6.—The Black & Decker Manufacturing Company, Towson, Md., have announced to the jobbing trade that the annual Black & Decker Week will be staged this spring April 28 to May 3. Several attractive cash prizes will be offered to individuals of the jobbers' organizations who conceive and put into effect the most original window trims.

Several new window cards and other window trimming material will be available for the jobbers' use in this contest. Complete rules and regulations of the contest together with an entry blank will be mailed to the jobbers in the very near future so that their window trimmers can complete all arrangements with the least possible delay.

FORD TO RACE AGAIN

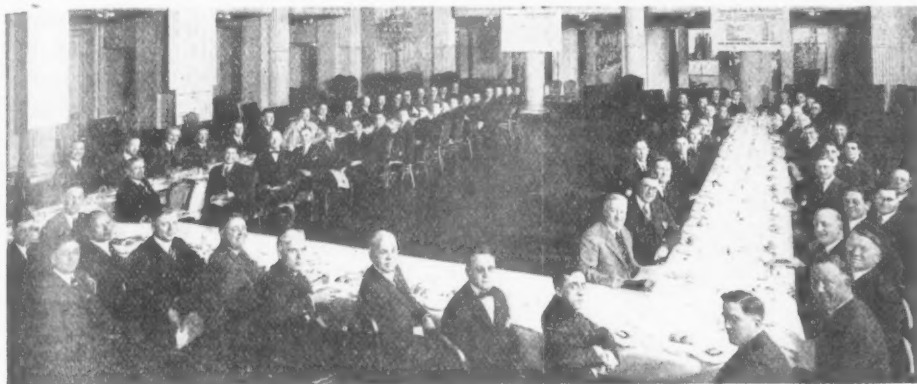
INDIANAPOLIS, Ind., March 6.—The Barber Warnock Co., Ford dealers here, whose entry in the last Memorial Day race aroused considerable interest, have announced that this year they will have three Ford racing cars in the big classic and that they are going to make a desperate effort to land first place.

Announcement also is made that Bennie Hill will be a contestant in the big race and that he will drive a Miller special. His is the third entry accepted.

HIGHWAY ESSAY CONTEST

WASHINGTON, March 6.—The Highway Education Board announces that "The Relation of Improved Highways to Home Life" will be the subject of this year's essay for the Harvey S. Firestone scholarship prize, for which all students of high school grade are eligible to compete. The lists close April 24, when all essays must be in.

Hudson-Essex Dealer Meeting



Automobile show week in San Francisco, Feb. 16-23, witnessed many dealer meetings. H. O. Harrison Co., Hudson-Essex distributor for northern California and western Nevada, entertained its dealers at the Hotel Francis. W. J. McAneeny, first vice-president of the Hudson Motor Car Co., addressed them.

Puritan Machine Company Files Dissolution Petition

DETROIT, March 6.—Directors of Puritan Machine Co., which has specialized in the servicing of orphan and obsolete cars, has filed a petition for the dissolution of the company and creditors have been ordered to show cause in Circuit Court, April 15, why a dissolution should not be granted. The directors are Alfred O. Dunk, his wife, Edith W. Dunk, and Oscar R. Taylor.

The service business of the company will be taken over by the Puritan Auto Parts Co., the officers of which are A. O. Dunk, president; H. G. Gremel, secretary and treasurer, and L. E. Craig, vice president. About 125 makes of cars which have passed into oblivion were being serviced by the company, some of the applications for service being on cars 20 years old. Service parts on practically all of these are carried in stock.

Dissolution of Puritan Machine is asked on the grounds that failing health compels Mr. Dunk to discontinue his active direction of the company. It is also set forth that additional funds are required and they are not available. Assets and liabilities are given as \$33,774.86 and \$32,298.89, respectively.

VESTA RAISES PRICE

CHICAGO, March 5.—An increase of 10 per cent in the price of storage batteries to dealers announced by the Vesta Battery Corp., is said by officials of the company to be due to the rapid rise in the market price of lead since last October. Other battery companies have announced increases of five per cent or more in the last few weeks. Lead is selling at 9 to 9.50 today whereas six months ago the price was in the neighborhood of 6.15 to 6.40. This rise has added \$1.22 to the manufacturing cost of a Vesta Ford battery, according to officials of the company, and the increase in price to the dealer covers only 88 cents of that.

URGES DEALER BRANCHES

CLEVELAND, March 6.—The retailing of automobiles is going to develop in the larger cities as has the retailing of other necessities, and dealers will more and more find it necessary to establish branches in various other shopping and business districts of the cities, says F. C. Chandler, president of the Chandler Motor Car Co.

Already in some of our cities the day has passed when a single building, no matter how large, located in the congested area, can serve all of the owners of the car that it represents. Traffic conditions and lack of space prevent it. In these cities the owner is turning to the dealer in his own locality, both for buying and for service. He finds the small dealer more accessible, physically and possibly more approachable otherwise—for the same reason that the grocer finds the neighborhood branch bank better suited to his needs than the great financial institutions down town.

These district dealers are going to be a greater factor each year in motor car merchandising, and the dealer that is so fortunate as to have able representation in each of the newly developed business sections of the city is going to meet with great success.

ASK SAFETY GUARDS FOR AUTOS

MONTREAL, Can., March 6.—Urging that the city oblige all motor trucks to be furnished with guards in the interests of child safety, the Trades and Labor Council has written the city executives asking that some means be adopted to lessen the automobile fatalities. The letter suggests that a by-law be drafted which would force all truck owners to equip their machines with some sort of a fender which would reach from front to rear wheels, and serve the purpose of a protector. A child struck by the side or rear of the truck would then be thrown aside and not fall underneath the wheels as has been a common occurrence of late.

U. S. Patent Ruling Settles a Point Long in Controversy

Holds Employer Entitled to Invention of Employee Hired for Specific Purpose

CLEVELAND, March 6.—Title to patent No. 1,249,473, issued to William J. Peck Dec. 11, 1917, relating to a rotary spring-forming and quenching machine has been acquired by the Eaton Axle & Spring Co. of Cleveland, it is announced, through a decision of the United States Supreme Court on Feb. 13, in favor of the Standard Parts Co.

The case was that of the Standard Parts Co. against William J. Peck, the Eaton company having acquired the interest of Standard Parts in connection with its purchase of the Perfection and Pontiac spring plants from the receiver of Standard Parts last spring. In this decision the Supreme Court reversed the decree of the Circuit Court of Appeals. Mr. Peck now will have to assign his patent to the Eaton company, it is said, as the successor to the interest of Standard Parts.

Outside of the value of the patent to the Eaton company, it is pointed out that the Supreme Court decision settles a point that has been in dispute for years as to the rights of an employer to the invention of an employee who has been hired for the specific purpose of making inventions for the employer. The Supreme Court holds in favor of the employer, declaring that "by the contract Peck engaged to 'devote his time to the development of a process and machinery' and was to receive therefor a stated compensation. Whose property was the 'process and machinery' to be when developed? The answer would seem to be inevitable and resistless—for him who engaged the services and paid for them, they being his inducement and compensation, they being not for temporary use but perpetual use, a provision for business, a facility in it and an asset of it, therefore contributing to it whether retained or sold—the vendee (in this case the Standard company) paying for it and getting the rights the vendor (in this case the Eaton company) had."

Evidence showed that Peck had designed the machine in 1915 while in the employ of the Hess-Pontiac Spring & Axle Co., which concern later was acquired by Standard Parts. Peck filed an application for patent under his own name, and in 1920 sued the Standard Parts Co. for infringement, claiming that the Hess-Pontiac company did not acquire, under contract, any interest in the patent, but merely a shop-right, which was personal and not transferable to the Standard Parts Co.

OAKLAND SALES RECORD

DETROIT, March 6.—Oakland Motor Car Co. set a new high sales record in February when the best previous month, June 1919, was beaten by over 1,000 cars. This exceeds last year by 300 per cent.

CONCERNING MEN YOU KNOW

R. M. Williams has been appointed service engineer and C. H. Vincent has been promoted from the engineering department to the position of quality engineer, formerly held by Mr. Williams, by the Packard Motor Car Co.

E. H. Baughman, for a number of years vice-president and general manager of the Ozburn-Abston & Co., Georgia, an associate of the company of the same name in Memphis, Tenn., has established a business of his own with headquarters in Atlanta, to represent automotive equipment manufacturers in the distribution of their products through jobbers. Mr. Baughman resigned a few weeks ago from the Ozburn-Abston Co. He has a wide acquaintance in the trade throughout the south, and proposes to undertake only a limited number of accounts.

P. M. Mahler, who resigned as export manager of D. J. Murray Mfg. Co., Wausau, Wis., has been appointed to a similar position with the Westcott Motor Car Co., Springfield, O.

John K. Light has been appointed manager of the Detroit office of the Root Company, general office and works at Bristol, Conn. Mr. Light for years has been associated with the Joseph N. Smith & Company, Detroit. The Root Company are large manufacturers of automatic counters, automobile and miscellaneous hinges, stampings, etc., a large part of their output being consumed in the automobile industry. Mr. Light will devote most of his energy to hinges for automobile hoods and windshields.

G. E. Sutton has become president of the Winton Urwick Co., Cincinnati. This concern handles the Winton cars, and also will sell Studebaker cars and service. Mr. Sutton was formerly sales manager of the Morgan & Hathaway Motor Co., Cincinnati.

S. S. Miller has been elected president and general manager of the Mohawk Rubber Co. of Akron, O. J. F. Jones has been named as sales manager.

Edwin D. Emmons, formerly sales manager of the Hayes Manufacturing Co., and also associated with the Hayes-Ionia Co., Jackson, Mich., has been appointed representative for the Detroit territory by the Bridgeport Coach Lace Co., of Bridgeport, Conn., manufacturer and distributor of automobile upholstery fabrics. Mr. Emmons has located in the General Motors building, Detroit.

John H. French, former president and general manager of the Michigan Stampings Co., Detroit, and Walter F. Tant, former secretary and treasurer, were guests at a testimonial dinner given at the Detroit Athletic Club by forty employees of the company, which has recently been taken over by the Briggs Manufacturing Co.

J. W. Jones has been appointed secretary of committees of the Automotive Equipment Association, Chicago, succeeding J. Ross Jennings, who resigned to become field secretary of the Motor and Accessory Manufacturers' Association, New York City, following the selection of A. W. Barber, the former field secretary, as trade observer. Mr. Jones was for a number of years private secretary to Nels Gross, president of the L. Wolff Mfg. Co., Chicago, large makers of plumbing supplies.

R. C. Ives has been appointed zone sales manager at St. Louis by Chevrolet Motor Co., succeeding C. C. Nangle, who is transferred to the post of assistant to E. W. Fuhr, regional sales manager in the St. Louis territory.

Henry Czaplicki, representing the Stutz car and Indian motorcycle as distributor in Danzig, Poland, territory is visiting his principals in this country. Mr. Czaplicki has two branches and eleven sub-dealers distributed among a population of 63,000,000. He is optimistic over business conditions in his country because of the stabilizing of currency. Danzig and Lithuania are now using only gold and silver and Poland and Upper Silesia will follow suit by the first of April.

John Squires, for the past three years assistant chief engineer for Maxwell Motor Corp., has been appointed director of service for Maxwell-Chalmers and Chrysler.

S. H. Hilleboe has been transferred from the Dallas branch of United Motors Service to the general offices of the company in the General Motors building, Detroit.

F. W. A. Vesper, president of the Vesper-Buick Automobile Co., St. Louis Buick distributor, who is touring Europe, recently wrote a letter to his brother, Walter H. Vesper, vice-president of the company, from Gibraltar. According to Mr. Vesper, horse-drawn vehicles are still largely used in Spain.

William E. Norris of Bridgeport, Conn., representing the General Motors Corporation in that state, died a few days ago in a hospital in Atlanta, Ga., following a short illness. Mr. and Mrs. Norris had been in Atlanta visiting friends. He was 60 years of age.

Lee H. Hazard, production manager of the Velie Motor Corporation, associated with that company 15 years, has retired and is succeeded by A. W. Weigel.

Nicholas Hanni, for a number of years in the automobile business in Troy, Mo., died recently at his home in that city, from the effects of a stroke of paralysis. He was a native of Switzerland and had been connected with the business interests of Troy for more than thirty years.

John L. Toner has been appointed retail sales manager of the Weber Motor Car Co., St. Louis distributor for the Studebaker. Toner has been with the firm since March 1, 1916.

H. W. Goodwin, formerly with the Coverly-Ballard Motor Co., prominent Salt Lake City, Utah, Ford and Lincoln dealers, is now sales manager for the Taylor-Richards Motor Co. of Motor avenue, Salt Lake City.

J. J. Cole, president of the Cole Motor Car Co., after a trip through the east and west, reports that present indications point toward a very successful spring and summer in the motor car industry in all parts of the country. Although the smaller makes of cars have gained greatly in popularity during recent years, he says present indications are that the larger and finer cars will be in demand during spring and summer. He further reports that spring booking of orders of Cole cars are very satisfactory.

Horace W. Naylor, Marmon dealer of San Diego, Cal., on his return from a six months' tour in Europe, expressed the opinion that the use of automobiles in Europe will never become as general as it is in the U. S., because, he says, that the European standard of living is far below our own and does not even admit the necessity of automobile transportation. Comparatively few American-made automobiles are seen in France, he said; many are found in Switzerland, some in Italy, and in Egypt the American small cars dominate the market. American cars of all quality classes are abundant in Palestine.

J. G. Roberts, president of the Philadelphia Nash Motor Co., 1235-39 N. Broad street, distributor for Nash and LaFayette cars, is a member of the directorate of the three representative automotive trade associations. For some time an active director in the Philadelphia Automobile Trade Association, he has recently been elected to a like position in the Pennsylvania Automotive Association, the state dealers' organization, and he also has been added to the board of the National Automobile Dealers' Association.

R. S. Saalfeld has been appointed sales manager of the Star Rubber Co., Inc., Akron, O. He came with the Star company in 1922, as assistant treasurer, and was later made treasurer. He formerly was with the Goodyear Tire & Rubber Co. For four years he was in the Far East, having charge of the Singapore and Ceylon offices. From 1919-1922 he was special representative of Goodyear's tire department.

port to dealer's expectations of a good season's business. Twenty dealer concerns exhibited and 28 makes were on show. There were also 25 accessory exhibitors.

MURPHY IN BIG RACE

INDIANAPOLIS, Ind., March 7.—Jimmy Murphy has signed to drive a Miller Special in the International 500-mile race which will be held at the Indianapolis Motor Speedway, Decoration Day, May 30.

To Hold Hearings on Dowell Bill for Federal Road Aid

Provides for Appropriation of \$300,000,000 of Government Funds for Building Public Highways

WASHINGTON, March 7.—Hearings on the Dowell bill, H. R. 4971, which authorizes the appropriation of \$330,000,000 of federal funds for aid in building public highways will begin on March 10 and last for probably a week.

Witnesses before the House Committee on Roads, which has charge of the bill, will include Thomas H. MacDonald, chief of the U. S. Bureau of Public Roads; Pyke Johnson, Washington representative of the National Automobile Chamber of Commerce; W. C. Markham, executive secretary of the American Association of State Highway Officials, and numerous state Commissioners of Highways.

The state Commissioners, who have already notified the committee of their desire to be heard, include: J. N. Mackall, chairman, State Highway Commission of Maryland; L. A. Baulay, director of Public Works of Ohio; Henry G. Shirley, chairman of State Highway Commission of Virginia; Frank T. Sheets, state Superintendent of Highways of Illinois; Fred R. White, president of the American Association of State Highway Officials, and C. M. Babcock, Minnesota State Highway Commissioner.

Under the provisions of the Dowell measure \$100,000,000 a year will be available beginning for the fiscal year ending June 30, 1926, 1927, and 1928, for public highways, and \$10,000,000 a year for the same years will be expended in forest highways.

Up to the present time a total of \$540,000,000 has been expended or authorized for federal highway construction, since the government inaugurated its road-building program in 1916, following the general agitation among representatives of the automobile industry at that time for better and more adequate highways.

The first general act appropriating moneys for the road-building program was passed on July 11, 1916, and provided for five million for 1917; ten million in 1918; fifteen million in 1919; twenty million in 1920, and twenty-five million dollars in 1921. Subsequent appropriations for public highways are as follows: 1922, 75 millions; 1923, 50 millions; 1924, 65 millions, and for fiscal year ending June 30, 1925, \$75,000,000.

BUICK SALES GAIN

FLINT, Mich., March 6.—The Buick Motor Car Co. sold 218,286 cars in 1923, according to an official announcement made today. This compares with 138,520 in 1922 and 83,888 in 1921. When the company has rounded out its program for increasing existing facilities at its main plant here and its subsidiary plant at Detroit, there will be a capacity for the production of between 235,000 and 260,000 cars annually.

Springfield, Mass., Dealers Stage a Show That Sells Cars

SPRINGFIELD, Mass., March 6.—The ninth annual automobile show of the Springfield Dealers' Association opened in the Municipal Auditorium March 3 with dealers and prospective buyers in an enthusiastic mood. Attendance on the opening day was reported by Manager Harry W. Stacy as more than double the number present on the first day last year. Sales are reported as lending sup-

BUSINESS NOTES

Fisher Body Corp., Detroit, and its subsidiaries report for the quarter ended Jan. 31 net income of \$5,667,176, equal to \$9.44 a share on the 600,000 shares of no par value capital stock outstanding, after deducting interest, federal taxes, etc., as compared with \$5,237,912 in the preceding quarter. The Fisher Body Co. of Ohio for the same quarter, reports net income of \$986,887, as compared with \$850,380 in the third quarter of last year.

C. M. Hall Lamp Co., Kenosha, Wis., has declared a dividend of 25 cents a share, payable March 31, to stock of record March 28.

C. R. Wilson Body Co., Detroit, reports net profits of \$1,086,073, after all charges and federal taxes, for the year ended Dec. 31, 1923. After allowing for the 7 per cent preferred dividend, this is equivalent to \$4.75 a share, par \$10, on the outstanding 200,092 shares of common.

Sharon Chevrolet Sales Co., Shelby, O., has been chartered with an authorized capital of \$25,000 to buy, sell and deal in automobiles. Incorporators are T. J. Chamberlain, R. F. Swaney, J. S. Cave, Herman W. Mentz and G. C. Albrecht.

Papers have been filed with the secretary of state chartering the High-Maynard Garage Co. of 2396-2398 N. High street, Columbus, O., with an authorized capital of \$10,000 to do a general garage business and buy, sell and deal in automobiles. Incorporators are William K. Krauss, Scott Krauss, Della G. Krauss and Harry A. Clarke and P. J. Guthrie.

The Automotive Bearing & Equipment Co., 205-207 E. Eighth street, Cincinnati, has been chartered with a capital of \$35,000 to manufacture, buy, sell and deal in parts, accessories and supplies. Incorporators are Stanley C. Feltham, Charles S. Moore, C. B. Helmig, G. C. Sterrett and Edwin G. Becker.

Rollo Ohio Co., Cleveland, O., has been incorporated with a capital of 500 shares, no par value designated, to buy, sell and deal in autos, trucks and other motor vehicles. Incorporators are Stanton Addams, Edward S. Lurie, Rose Umans, Thomas A. Burke, Jr., and Lester E. Hinkle.

The Greenwald Tire Co., Ninth and Race streets, Cincinnati, has been incorporated with the following officers: I. S. Greenwald, president; Samuel J. Greenwald, vice-president; Jack Radin, secretary; Albert Radin and Sol Zielonka, directors.

The first annual sales convention of branch managers and distributors associated with the Flint Motor Co. of Flint, Mich., and the Flint Motor Division of the Locomobile Co. of America was held in New York City recently with 45 of the retailers in attendance from 19 major cities. W. C. Durant and other leading executives of Durant Motors also were present at the two-day session, which was devoted to co-ordinating Flint policies governing manufacturing, sales, sales promotion, service, finance and traffic.

Novo Engine Co., Detroit, directors have been re-elected as follows: R. H. Scott, C. E. Bement, Harry C. Teel, D. E. Bates, E. T. Teel, E. J. Bement and D. R. Hoadley. The company's business for the past year showed important increases with export business coming steadily to the fore after a long period of quietude.

The Pressed Metal Co. has been organized at

Pawtucket, R. I., by Dutee Flint, Darius Goff, R. W. Reid and others to manufacture Ford fenders. Mr. Flint is Ford distributor in Providence and operates his own steamer for the purpose of bringing Ford cars from the Kearny plant to Providence.

Storms Tire and Motor Company, Inc., Asheville, N. C., has been chartered for general automobile business. Authorized capital stock is \$20,000 and \$6,000 has been subscribed by L. E. Storms, Burgin Pennell and W. R. Gilmore, all of Asheville.

Davenport (Ia.) Auto Sales Co. has been incorporated with \$10,000 capital stock to handle automobiles and accessories. E. H. Ellinghouse is president and Charles Schwieder, secretary, of the company, which is under a 20-year franchise.

Virgil Wise of Bethany, Mo., has purchased the Yellow Front Garage at Union Star, Mo., from the Dowd brothers.

Western Auto Co. of Provo, Utah, has filed incorporation articles showing a capital of \$25,000 in \$10 shares. Harry Dragnates is president, Glen S. Nelson, vice-president, and Harold C. Bates, secretary-treasurer.

Papers have been filed with the secretary of state authorizing the increase in capital stock of the Ferd Hock Auto Supply Co., Logan, O., from \$10,000 to \$40,000.

Papers have been filed with the secretary of state authorizing the increase in capital stock of the Mansfield, O., Chevrolet Co. from \$25,000 to \$50,000.

Jeromeville, O., Motor Car Co. has been chartered with an authorized capital of \$10,000 to wholesale and retail automobiles, trucks and tractors and parts and accessories for same. Incorporators are R. W. Topping, M. T. Topping, H. E. Budd, V. C. Ropp and James Hess.

West End Chevrolet Co., Dayton, O., has been chartered with a capital of \$25,000 to buy and sell new and used automobiles. Incorporators are Peter J. O'Donohue, R. A. Suman, Elizabeth Pottle, Howard E. Koogler and R. H. O'Brien. Headquarters of the company are located at 1218 W. Third street.

Motor Wheel Corp. shows net income of \$1,292,282 after federal taxes, in its annual report for 1923. This is equivalent to \$2.56 a share, \$10 par, earned on the common after preferred dividend payments. The balance sheet shows total assets of \$13,854,226, of which \$711,522 is on the cash account. Net profit was \$1,473,282, against \$791,769, while preferred dividends amounted to \$160,302 and common \$355,712, leaving a surplus of \$776,268.

Stonewall Service Station of Conway, N. C., has been chartered for general automobile business. Capital stock is \$5,000. A. W. Barrett is president and treasurer and A. E. Goldfinch, vice president and secretary.

The Consolidated Manufacturers, Inc., Cambridge, Mass., has organized with A. S. Guy as president and treasurer to handle the products of The Dyer Co., the E. C. Long aluminum piston, the American Metal Parts Company's piston rings and the Reus Manufacturing Company's products. The company also expects to represent the manufacturers of a ring gear and of valves. The general headquarters is at 155 Brookline street, Cambridge, Mass., and branches are already located in New York City, Philadelphia and Detroit.

over the outlook for the country as a whole this year.

Accessory sales in the district since the first of the year have been approximately 20 per cent greater than the same period last season.

BUILD FEDERAL AID ROADS

WASHINGTON, March 6.—A total of 3,914.6 miles of federal aid highway was completed during the last six months of 1923. Projects completed prior to July 1, 1923, totaled 23,297.2 miles, or a total of 27,211.8 miles since the government undertook its road building program in 1917.

Figures just made public by the Bureau of Public Roads show that on February 1, the government has available for federal aid a total of \$70,636,000 proportioned among the 48 states.

Urges Jobbers to Take Advantage of Spring Meeting

A. E. A. Replacement Parts Film to Be Shown at New Orleans for First Time

CHICAGO, March 6.—Special efforts are being made by the Automotive Equipment Association to secure a better jobber attendance at the New Orleans meeting to be held April 1-5 at the Hotel Roosevelt. It is felt that in the past some jobbers have not had a full appreciation of the benefits afforded by the spring meeting in the way of sales and promotion ideas. This year, however, it is expected that things will be different and responses which have been received indicate that the jobbers will be more in evidence than in former years.

The new film on "Replacement Parts" will be shown for the first time at the New Orleans meeting. Many jobbers are looking ahead and are sending in requests for the use of the new film. This film was prepared under the direction of the merchandising department of the association and in all probability it will be routed about the country in about the same manner that the Christmas films were handled.

Preliminary reports will be received from the Harvard Bureau of Economic Research which is conducting a survey of the business of members of the association. The initial reports will cover the jobbing end of the automotive equipment business.

A special train will leave Chicago over the Illinois Central, Saturday, March 29, at 12:30 p. m., arriving in New Orleans at 5 p. m. the next day. Special Pullmans will leave St. Louis and join the A. E. A. special at Carbondale, Ill., and also similar arrangements will be made from Cincinnati, the junction point being Fulton, Ky. Commissioner W. M. Webster is in charge of the special train from Chicago.

CROWDS AT AKRON SHOW

AKRON, O., March 5.—With more than 40,000 persons attending, exclusive of school children, and more than \$400,000 worth of passenger cars, trucks and tractors sold the automobile show held at the Central Armory was unanimously acclaimed as the most successful ever held in the rubber city.

The fact that the exhibition company at the suggestion of General Manager Frank O'Neil combined the first aero exhibit to be held in the country with the automobile show, expressive of the new interest in this type of transportation in the rubber city, aided materially in drawing large crowds to the show and made the exhibit doubly interesting to the school children who were given free admissions to the show.

A total of 496 automobiles were reported as having been sold although the number of trucks and tractors was not officially reported.

Southern Sale of Accessories Largest in Section's History

ATLANTA, Ga., March 7.—Accessory sales to dealers in the southern territory during the past several months have been the largest in the history of the automotive industry in this section, with the 1924 accessory outlook giving promise of the best year since the war, according to officials of the Elyea Co., 15 North Pryor street, Atlanta, expressed at a recent convention held by the Atlanta firm. This is one of the largest and the oldest firms in the South in the wholesale accessory and equipment field.

A number of northern and eastern manufacturers of accessories whose lines the Elyea company has handled for several years were present at the meeting, and expressed considerable optimism

IN THE RETAIL FIELD

Hudson-Roberts Motor Co., Clayton, Mo., has opened a St. Louis branch at 6153 Delmar boulevard. William Sarber, who was connected with the West End Sales Co., who formerly occupied the building where the new branch will be located, is to be manager.

Chevrolet Motor Ohio Co., Cincinnati, has announced the appointment of the Superior Chevrolet Sales Co., and the Rankin and Frankel Motor Co., Cincinnati, as new sales and maintenance establishments.

The newly organized General Chevrolet Sales Corporation at 126 E. Sixth street, Cincinnati, opened its sales room on March 3. This concern will handle Chevrolet cars exclusively. The same organizers under the name of Fuller Automobile Co. handle Hupmobile cars, at 113 E. Seventh street, Cincinnati.

A new distributor of the Auburn automobile is Virginia-Auburn Co., 1410 W. Broad street, Richmond, Va.; the following have been appointed dealers: Thomas F. Paddon's Sons, Dickson City, Pa.; Eureka Motor Sales Co., Eureka, Ill.; A. H. Suckow, Lancaster, Pa.; John A. White Motor Co., 592 North street, Pittsfield, Mass.; Craddock's Garage, E. R. Marsters, prop., Medford Mass.; Kissell Motor Sales, 330 E. State street, Hammond, Ind.; J. V. Basta Motor Sales & Service, 11903-5 Miles avenue, Cleveland, and James E. Mayville, 176 Broad street., Lynn, Mass.

Oldsmobile Sales Co. of Ogden, Utah, has changed its name to the Nibley-Meldrum Co., according to its new articles of incorporation.

H. S. Dowling, of the Dowling Motor Company, Star and Durant distributors for North Carolina, and also retail dealers for Charlotte, N. C., announces that the Carolina Automobile Company of that city has been appointed dealers for the two cars in Charlotte. The Dowling Motor Company will also continue to sell at retail, thus giving the company two dealers in that city.

Martens & Clark, Bloomington, Ill., have dissolved partnership after being engaged for ten years in the motor car distribution business and the senior member of the firm, John Clark retires. Ernest Martens, who remains, has taken a successor to Mr. Clark, in his cousin, Edward C. Martens, who has been distributor of the Stephens car for the past seven years his sales agency and service station being at 407-411 South Main street. The latter will take up his headquarters at 315 East Front street, the name of the firm to be the Martens Motor Car Company. The firm will distribute the Haynes, Stephens, Chalmers, Maxwell and Chrysler cars, in the McLean county territory.

Galesburg, Ill., automobile dealers recently took advantage of a merchants' selling campaign to present their simultaneous individual shows and the attendance in the downtown sales room and the quick response of the public to this plan has firmly established it in favor with the dealers. A dozen of the principal sales agencies exhibited. Canvass of the dealers has indicated that the results are quite in keeping with the previous central show plan.

Farber Auto Co., Loganville, Wis., near Portage, lost its garage, equipment and other contents in a fire recently, which destroyed five buildings in the business district and caused an aggregate loss of \$40,000. The Farber company will rebuild at once.

Beaudette Garage Co., Hartford, Wis., has contracted for the erection of a new garage and service building, 55x100 ft., estimated to cost \$22,000.

Froelich Bros. Auto Rental Co., now at 799 Seventh street, Milwaukee, has started work on a new garage and service headquarters, 55x90 ft., at Tenth street and North avenue. It will cost about \$18,000.

McGeehan-Buick Co., Green Bay, Wis., is a new \$25,000 corporation which takes over the business of Grover McGeehan & Co., Buick dealer at Green Bay and DePere, Wis.

Stuart, Schmidt & Co. is the name of a new \$12,000 corporation at Sheboygan, Wis., which will engage in the public garage and service business, deal in equipment, parts, etc., and do a general automotive business. The principals are George Stuart, Walter Schmidt and Richard Schutte. Headquarters have been established in a building 49x160 ft. at 1119-1121 Superior avenue, Sheboygan.

Greiner Nash Co., Kenosha, Wis., Nash and LaFayette dealer, is building a two-story fireproof sales and service building, 80x140 ft., estimated to cost \$50,000.

Woodside-Briese Co., Milwaukee, a new \$50,000 corporation, has been appointed a community dealer in the Hudson and Essex and has opened for business at 1244 Third street. F. E. Wood-

side is president and W. F. Briese, formerly service manager of the Jesse A. Smith Auto Co., Milwaukee, Hudson and Essex distributor, is secretary and service manager.

Zinky Auto Co., Cudahy, Wis., has been incorporated with \$10,000 capital stock to deal in automobiles, operate a garage and repair shop, etc. The incorporators are G. L. Zinky, D. E. Noll and R. H. Zinky.

The Jacksonville, Ill., Automobile Dealers' Association entertained a delegation of dealers and bankers of Springfield, Ill., at the regular meeting recently. The principal speaker was A. H. Rankin, a banker of Springfield, Ill., who urged the dealers to apply general business methods to their affairs. As a result of the meeting, it was decided to enlarge the scope of the organization and invite dealers from not only Morgan county, but also those of Scott county.

Blackhawk Motor Co., 1501 Monroe street, Madison, Wis., has been appointed Kissel dealer in Dane county and contiguous territory.

Lakeside Motor Car Co., 433-435 North avenue, Milwaukee, has been appointed a community dealer in the Paige and Jewett. It has changed its corporate title to Paige-Jewett Sales Co., and increased its capital stock to \$25,000. New officers have been elected as follows: President, Norman S. Bieringer; vice-president, William B. Tripp; secretary-treasurer, Harry Schostak. H. A. McCannon is in charge of the reorganized service department.

Daniel Kern and George Williams, Madison, Wis., have been appointed Star and Durant dealers and opened sales and service headquarters in the new Auto Wash Co. building on West Washington avenue. Kern formerly was with the McGuire Auto Sales Co., Madison, and Williams was Star and Durant dealer at Orfordville, Wis.

Wisconsin Battery & Tire Co., Racine, Wis., is a new \$5,000 corporation organized by Howard E. Johnson and Edward H. Brock to do a general automotive electrical and tire sales and repair business.

The Nelson Tire & Radiator Service, Rice Lake, Wis., has opened for business in the former Lyric Theater building, with Henry Nelson as manager. The concern operates a similar business at New Richmond, Wis., under the management of Dewey Nelson.

D. W. Stuart has bought the City Service Station, Troy, N. C., from Tom Atkins and already has taken over the business.

Heath Miller has opened a service station and accessory business here, on Eldorado street, Troy, N. C.

Smith Bros. Motor Car Co., 828-832 Main street, Peoria, Ill., have been appointed distributors for the Hupmobile in the Peoria county territory.

Kelly Motor Car Co., Cincinnati, entertained its dealers recently with a dinner at the Gibson Hotel. S. D. Briggs, sales manager of the Chrysler Co., addressed the gathering, as did C. F. Gibson, district sales supervisor of the Maxwell, Chalmers, Chrysler.

Herchede Motor Car Co., Cincinnati, gave a dinner recently to Durant and Star dealers of Ohio, Indiana and Kentucky. Tom Gerrard, general sales manager of the Lansing, Mich., plant, addressed the gathering.

Tobin-Sutton Co., Ford dealer, 636-640 Lincoln avenue, Milwaukee, Wis., will start work about March 25 on the construction of a new sales and service building, 60x185 ft., two stories and basement, at Eighth and Windlake avenues. It will cost about \$38,000 complete.

Ben Sadoff Iron & Metal Co., Fond du Lac, Wis., has enlarged the scope of its business to include buying and selling of used cars, reconditioning or salvaging such vehicles, and carrying spare parts and units so derived.

The Texas Co., which has maintained a branch office in Milwaukee, Wis., at 209 Jackson street, under the management of Ernest A. Knight, is establishing a large tank storage and distributing plant, located at Forty-eighth and State streets. The investment will be about \$50,000, it is stated.

DuBois-Haevens Motor Co., Green Bay, Wis., have been reorganized. The concern will henceforth be styled the DuBois Motors Co., with \$32,500 capital, and John DuBois as president. It is Oldsmobile and Dort dealer.

A general convention of the southern dealers was held by the Firestone Tire & Rubber Co. at the Piedmont Hotel in Atlanta, Ga., recently for the purpose of outlining the sales policies of the company and plans for the coming year on balloon tires. About 150 dealers handling the Firestone line in the territory were present at the meeting, which was in charge of W. G. Manley, manager of the southern division.

Fire recently totally destroyed the salesroom and service station of the Blue Ribbon Auto Sales & Auction Co., 275 N. Twentieth street, Columbus, O., and about a dozen automobiles were burned. The company handles the National motor car. The blaze which was believed to be of incendiary origin caused a loss of about \$20,000.

Lynn M. Shaw and P. F. Drury, traveling representatives of the National Automobile Dealers Association, have been secured for an address before the automotive dealers of Springfield, Ill., on March 19. All salesmen and other employees will be invited to attend. Mr. Shaw will speak upon the subject, "Five per cent and the dealer outlook," while Mr. Drury's talk will be on the topic, "Getting the most out of your business."

Gilbert H. Large Motor Car Company, Taylorville, Ill., has dissolved its corporation and surrendered its charter. It was organized in 1920 with capital stock of \$20,000. A garage and sales agency was operated at 320 West Market street. Gilbert Large was president and Ralph Rocks, secretary.

Motor Supply Company of Jefferson City, Mo., has purchased a site and will erect a combination garage and apartment house.

Service Motor Company of Independence, Mo., has been purchased by Blaine Sterrett and Roy R. Farber. Sterrett had been connected with the firm two years under the previous owners, C. A. Wells and Gordon Wells.

A company styled the South Side Nash Company has opened quarters at 3500 Gravois avenue, St. Louis, and will handle Nash cars. The building was formerly occupied by the Worrell-Nash Co., which recently removed to 1610 Locust street. The officers of the South Side Nash Co. are Fred W. Gaterman, president; William J. Wolf, vice-president and William J. Wolf, vice-president and William Steinger, secretary and treasurer. All the officers of the concern have been connected with Nash distribution in St. Louis for some time.

Knight Motor Co., distributor of the Ace Motorcycle in St. Louis, has been appointed an Oldsmobile dealer by the De Luxe Automobile Co., Oldsmobile distributor. The company of which A. A. Knight is president, is located at 3327 Locust street.

Bobb Chevrolet Co., is the name of a new concern at 519 East Whittier street, Columbus, O., which will deal in Chevrolet cars as well as operate a service station. George W. Bobb is head of the new company. He was formerly with the H. B. Coen Co., Ford dealers.

A new concern, Guerts-Schofield, Inc., has entered the Salt Lake City territory as distributors for the Rickenbacker and Dodge cars. It is located at 7th South and State streets and will have as president, W. T. Guerts, and as manager and treasurer, C. A. Schofield, formerly with the Richardson-Bower Company.

When a can of gasoline was overturned recently, it leaked through the floor and into a furnace in the basement of the Reynolds Brothers' Garage at 2715 St. Joseph avenue, St. Louis, Mo., and caused an explosion and fire which resulted in a loss of \$4,300.

The firm of Buckley-Pannell-Setzer, Inc., has taken over the distribution of Lee tires in St. Louis, eastern Missouri and southern Illinois, succeeding Campbell-Niedringhaus. The officers of the new company are H. G. Buckley, president, W. C. Pannell, secretary and treasurer and T. C. Setzer, vice-president. The company occupies the same premises as the previous distributors at 3569-73 Lindell boulevard.

The Methudy Tire & Rubber Co., 3549 Lindell boulevard, St. Louis, Mo., distributors of Ajax tires has absorbed the Megue Rubber Co. McKone tire distributor of which Edward J. Methudy was president. The business of both companies will be transacted in the future from the Methudy plant. Eugene Methudy, brother of Edward, is president of the Methudy company. The building formerly occupied by the Megue Rubber Co. at Jefferson avenue and Locust street has been taken over by the Fry Tire Co., St. Louis Norwalk tire distributor, of which Nat Fry is president.

St. Louis Motor Car Co., Jordan and Kissel St. Louis distributor, has added the one story building adjoining its salesroom at 3137 Locust street to its premises to be utilized as a used car department. The building was formerly occupied by the Midwest Tire Corporation which has moved into new quarters at 4054 West Pine boulevard.

Mason-Kraepelin Motor Co., Whitewater, Wis., Buick distributors, recently held a two-day public exhibition of their line of merchandise, and invited inspection of their service stations in connection with it. Lunch was served free each day and each person registering was given an opportunity to win a prize.

Leyman-Buick Co., Cincinnati, has added to its present departments one equipped to handle all kinds of sheet metal and radiator work. Special attention will be given to the straightening of bodies and fenders and any radiator repairs that may be necessary.

COMING MOTOR EVENTS

AUTOMOBILE SHOWS

Bethlehem, Pa.	March 23-29	Lehigh Valley Automobile Show.
Boston, Mass.	March 8-15	Boston Automobile Dealers' Association and the Commercial Motor Vehicle Association, Chester L. Campbell, Manager, 5 Park Square.
Burlington, Vt.	April 2-5	Ethan Allen Club, Thomas W. Parkhill, Chairman.
Calumet, Mich.	April	Central Storage Co., Jos. A. Savini, Manager.
Denver, Colo.	March 11-15	Denver Automobile Dealers' Association, F. F. Vic Roy, Manager.
Duluth, Minn.	March 17-22	Duluth Automotive Dealers' Association, A. R. Kent, Secretary.
Fort Worth, Tex.	March 8-15	FortWorth Automotive Dealers' Association.
Goldsboro, N. C.	April 21-26	Chamber of Commerce, W. C. Denmark, Manager.
Great Falls, Mont.	March	Montana Automobile Distributors' Association, Lyman E. Jones, Manager.
Green Bay, Wis.	Aug. 25-30	Automotive Division, Association of Commerce, W. F. Kerwin, Manager.
Greenwich, Conn.	March 11-16	Battery F., N. Y. N. G., A. R. Kent, Manager.
Kingston, N. Y.	Mar. 6-8	Kingston Automotive Dealers' Assn., M. T. Southard, Secretary.
Logan, Logan Co., W. Va.	Mar. 10-15	Logan Automobile Dealers' Assn., P. L. Brothers, Chairman.
Milwaukee, Wis.	Aug. 25-30	Milwaukee Automotive Dealers' Association, Fall Show, Bart L. Ruddle, Manager.
Mitchell, S. D.	April 17-19	At the Corn Palace, directed by P. M. Young.
New Orleans	March 31-April 4	Spring meeting of the Automotive Equipment Association.
Oklahoma City, Okla.	March 24-29	Oklahoma City Motor Car Dealers' Association, E. T. Bell, Secretary.
Oswego, N. Y.	March 19-22	Oswego County Automobile Merchants Association, J. S. Ayres, Secretary.
Reno, Nev.	June 2-9	Nevada State Automobile Exposition.

Richmond, Va.	March 8-15	Richmond Automotive Trade Association, J. A. Kline, Chairman Show Committee.
Sacramento, Cal.	Sept. 1-10	State Agricultural Society, C. E. Paine, Manager.
Terre Haute, Ind.	Feb. 25-March 1	Terre Haute Automobile Dealers' Association, A. E. Kress, Secretary-Treasurer.
Toronto, Ont.	Aug. 23-Sept. 6	Canadian Automotive Equipment Association and the Automotive Industries of Canada, Gib Robertson, Secretary.
Washington, D. C.	March 8-15	Washington Automotive Trade Association, Walter Lambert, Secretary.
Washington Hgts., N. Y.	March 26-31	Washington Heights Automobile Dealers' Association, H. G. Stiles, Manager.

FOREIGN SHOWS

London, Eng.	Oct. 16-25
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CONVENTIONS

Albuquerque, N. M.	May 26-31	U. S. Good Roads Exhibition.
Galesburg, Ill.	March	Annual Convention of the Illinois Automotive Trade Association.

RACES

Altoona, Pa.	June 14	A. A. A. 250-Mile Speedway Event.
Fresno, Cal.	April 24	A. A. A. 150-Mile Speedway Event.
Frisco, Cal.	Oct. 4	A. A. A. 150-Mile Speedway Event.
Indianapolis	May 30	A. A. A. 500-Mile Speedway Event.
Kansas City	July 4	A. A. A. 250-Mile Speedway Event.
Kansas City	Oct. 19	A. A. A. 250-Mile Speedway Event.
Los Angeles	Nov. 24	A. A. A. 250-Mile Speedway Event.
Syracuse, N. Y.	Sept. 1	A. A. A. 100-Mile Speedway Event.

The READERS' CLEARING HOUSE

Questions & Answers on Dealers' Problems

Magneto Winding Continually Develops Short Circuits

Q—We have had trouble with two 1915 Ford cars developing shorts in the coils of the magneto. On one of these we ran battery current through it and found the short to be apparently due to carbon piled up on one of the connections running from one coil to another. This carbon apparently shorted the copper strap to the coil support. We cleaned this off and shellaced the copper connection carefully and the magneto ran fine for about two weeks and then the same thing happened again. We did this three times and finally put in a new coil. The coil had only been in use one season. This car has a vacuum oil saving device which draws air from the oil breather and we were wondering if this would account for the trouble which was apparently due to an accumulation of carbon.—Hamilton & Warren, Crandell, Manitoba, Canada.

A—We do not believe that the device attached to the breather pipe would have any effect and even the slight amount of oil drawn into the combustion chamber in this way, if it did anything, would produce carbon on the piston but would not produce a carbon down in the oil.

It is possible that you have used an oil which contains conducting material and this material may have settled out and caused the short circuit to which you refer. It is also possible that a poor grade of oil has been used which has emulsified and if this solidified oil has had acid characteristics it is possible that it might have accounted for the trouble.

Instead of shellac we believe you would have better results if you used a good grade of varnish, allowing it to dry thoroughly before using the coil. Water glass or sodium silicate is also quite effectual in acting as an insulation.

HEATING WIRE WOUND ON CONE

Q—I would like to know whether it is possible to heat a coil of wire wound on an insulation cone, with 6 volts from a storage battery and with a current consumption of about 2 amperes. State the number of turns and size of wire and proper wire to use. The overall length of the coil is to be about 4 inches.—H. L. Bosler, P. O. Box 115, Festus, Mo.

A—The amount of heat generated in a wire is dependent on the voltage and the current. For example, if you have a coil of wire which draws 2 amperes on 6 volts you have 12 watts, which is obtained by multiplying the volts and amperes together.

You can get an idea of the amount of heat by considering the heating of an ordinary lamp bulb. This operates on

The Readers' Clearing House
THIS department is conducted to assist dealers and maintenance station executives in the solution of their problems.

All questions are answered direct by letter, so the name and address should be given in full. This saves waiting for the answer to be published, which sometimes occurs several weeks late, depending upon the space available.

Readers' names will not be published with articles, if a request to this effect is received with the letter.

Inquiries not of general interest will be answered by personal letter only. Emergency questions will be replied to by letter or telegram.

Also state whether a permanent file of MOTOR AGE is kept, for many times inquiries of an identical nature have been made and these are answered by reference to previous issues.

Addresses of business firms will not be published in this department but will be supplied by letter.

Technical questions answered by B. M. Ikert, P. L. Dumas and A. H. Packer; Legal, by Wellington Gustin; Paint, by G. King Franklin; Architectural, by Tom Wilder; Tires, by a Practical Tire Man; General Business questions, by MOTOR AGE organization in conference.

6 volts and draws about 2.5 amperes so that it generates heat due to the dissipation of 15 watts.

If ordinary copper wire is used it is necessary to use a very great length of it because the resistance is so low. Accordingly for a resistance coil it would be well to use German silver wire which can be obtained from any large electrical supply house. The dimming resistances used with some of the electrical systems are also made of German silver wire or equivalent resistance wire and it is possible you might get a dimming resistance of some sort from an electrical service station.

We could possibly give more information if we knew the purpose for which this coil is intended. If you figure on making a heater for the intake manifold we wish to say that the current is not sufficient. We have used as much as 30 amperes in an experimental coil used in an intake manifold without having results which would be called highly successful. Will be glad to supply additional information if you advise us what you are trying to build.

Wear in Cylinder Walls Not Ordinarily Covered by a Guarantee

Q—I am in doubt about a problem on which I would like an answer by return mail. A party in this city bought a Universal engine of which I was in charge about a year ago and it has run about 50 hours all told. While cleaning the carbon out of this engine recently and grinding the valves the other day, I found that two of the pistons were so loose that you could take your fingers and push them back and forth. This trouble has caused it to pump oil since the day that it was purchased, but not being in charge of the engine all the time we did not notice this condition.

The engine was guaranteed for one year and this guarantee has just expired. Do you think that we could make them replace the pistons and rings, for we have used the oil they recommend and this engine has been taken care of very carefully?—Richard Bromley, Louisa, Ky.

1—You cannot determine the condition of the engine by pushing the pistons back and forth with your fingers. You should use a thickness gage and see what clearance there is between the piston and cylinder wall when one of the leaves of the gage is inserted at one side of the piston. A general rule for cast iron pistons is that the clearance should be .001 inch, that is, one-thousandth of an inch for each inch of diameter. For example, if the piston is four inches across the top then the .004 thickness gage should go in at the side.

To check the engine carefully inside micrometers should be used to see if the cylinder is out of round. If the diameter is more than .003 in. greater in one direction than in the opposite direction, it indicates that regrounding or refinishing is necessary before new pistons can be properly fitted.

Ordinarily the question of wear is one that is not covered by a guarantee, for it is affected by such things as dust being drawn into the carburetor and is something the manufacturer cannot figure on. If, however, with proper lubrication and running at normal speed, a connecting rod should break in two or something of that sort should happen, it would be a condition which might come under the guarantee.

If the engine has been used carefully, as you say, and was new or at least in good condition at the start, it is quite likely that new piston rings carefully fitted, will take care of the trouble. We would suggest your reading previous copies of MOTOR AGE which, from time to time, have had articles in them in regard to fitting pistons and rings.

Separate Pedestrian Entrance Good Idea in a Garage

Q—Having sold my interest in the largest garage here, I am planning a new garage to be built this spring. I have a lot fronting 72 feet on street and running back 160 feet to a paved alley. I will use this garage for storage principally, but will have two or three showrooms in front part. One for display of new cars. Service to be done in another building close by. I expect to have a basement and two floors above with in-and-out entrances either together or at different points.

I had thought something of having an arcade for customers to enter and leave without using the entrance used by cars. I also want to use ramps. One up and one down for top floor and a single one for basement, where I will keep dead storage or cars left for several days. Expect to build of brick with concrete floors and ramps.

Can you give me any suggestions for such a garage so as to be able to work the ramps in using as little space as possible. Also the best plan to place cars in order to get the greatest number in this space. I expect to use electric or air pressure doors, whichever is most practical. Will be steam heated and as modern as possible. Want to have two washrooms.

I would also like to know where I could get necessary blueprints for such a garage as I want. Our architects here have had practically no experience in building or planning a modern garage. Want to invest about \$50,000 more or less in this garage. Any information you can give me will be highly appreciated.—J. M. Kimbrough, Lexington, Ky.

We are enclosing a blue-print showing a three-floor layout with ramps for car communication. As you have briefly stated in your letter, the entrance is at one side of the building and the exit at the other.

Cars entering may either turn to the left and enter the main floor and thence turn to the right and go down to the basement, or may go directly to the second floor. Cars coming up from the basement may go out through the alley or turn and go through the building and out the front exit. Cars from the second floor will go directly down the ramp and out.

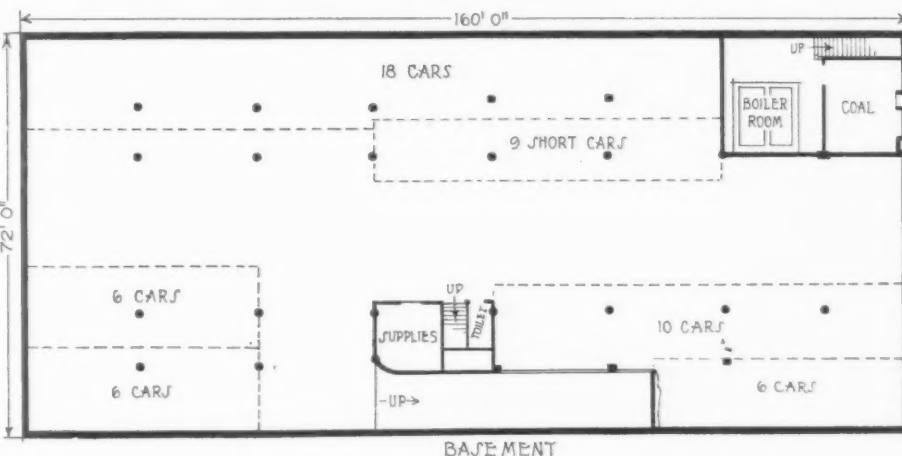
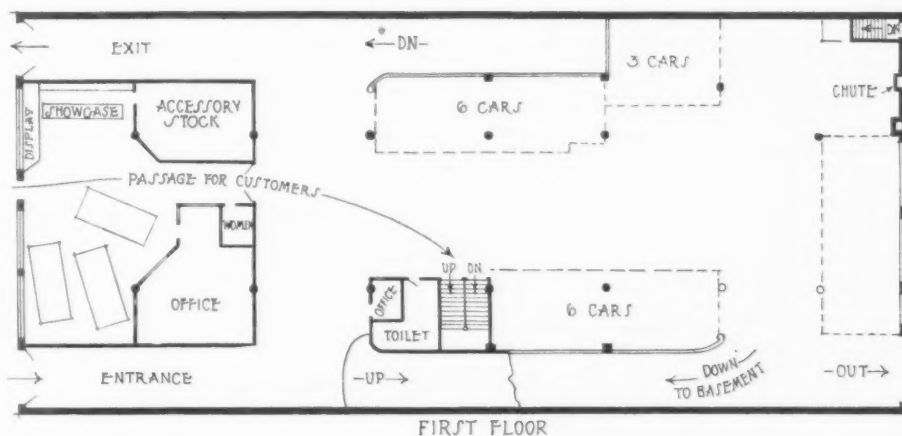
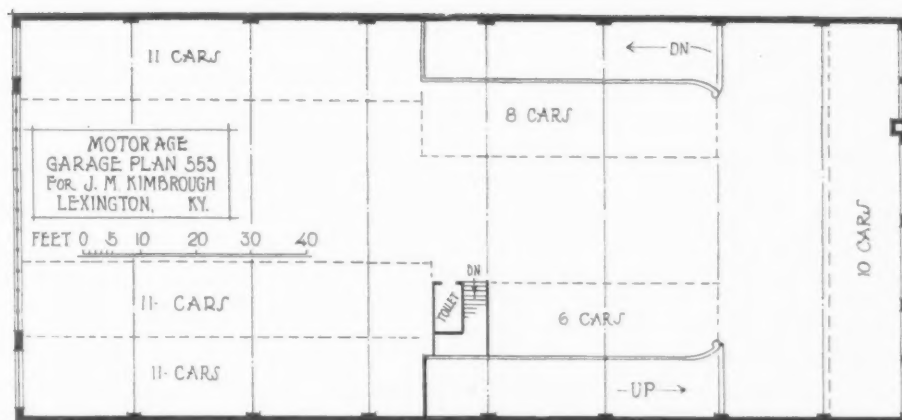
As you will note, the ramps cut up the floor space pretty badly in this layout, but even at that the car capacity is quite extensive. There are, however, spaces where only short cars may be stored.

The car display room, office and accessory store are in the central space between the two front entrances, and there is a passage through this space so that customers may take this route to the stairways or to the garage on the first floor. This, we think, is an excellent idea, as it brings the customer in contact with the accessory store and the new cars on the show room floor.

The boiler room is in one corner of the basement with a stairway leading directly outdoors, as it is required in most large cities.

BOSCH-ESSEX BRUSH ADJUSTMENT

Q—Where is the third brush adjustment on a Bosch generator on a 1923 Essex?



Architectural Service

IN giving architectural advice, **MOTOR AGE** aims to assist its readers in their problems of planning, building and equipping, maintenance stations, garages, dealers' establishments, shops, filling stations, and, in fact, any building necessary to automotive activity.

When making request for assistance, please see that we have all the data necessary to an intelligent handling of the job. Among other things,

we need such information as follows:

Rough pencil sketch showing size and shape of plot and its relation to streets and alleys.

What departments are to be operated and how large it is expected to be.

Number of cars on the sales floor.

Number of cars it is expected to garage.

Number of men employed in repair shop.

How much of an accessory department is anticipated.

1—Two types of generators were used. On one of these it is necessary to remove the commutator cover and then loosen a hex nut which holds the third brush holder. It is then possible to shift the brush one way or the other after which the nut should be tightened again.

On the other type generator the ad-

justment is from the outside by means of a screw just above the oiler. This screw is connected to a small pinion which engages with a rack or series of gear teeth which is a portion of the brush holding plate. Turning this screw will vary the current supply to the battery.—Harold A. Barton, Stockton, Ill.

Principle of Vibration Dampers

Q—Describe vibration damper used on late model Franklin car, also on late model Packard.

1—Illustrations and description of the Franklin vibration damper were printed in MOTOR AGE on January 17 and January 24.

The vibration damper used on the Packard straight eight and the six cylinder cars is similar to the damper used on previous models. A disassembled view of the Packard damper is not available so all that we can supply is a general description of dampers of this type which will apply to the Packard, the only difference being a few detailed changes in construction, the principle, however, being retained.

The vibration damper consists of a small flywheel placed at the forward end of the engine, supported by the crankshaft, but not rigidly fastened thereto. It is held between friction discs which are pressed together by springs. When the engine runs at the critical speed, there will be the same tendency for the crankshaft to "thrash" as if the vibration damper were not used. But the damper has a great deal of inertia and any sudden variation in the motion of the forward end of the crankshaft will cause the friction brakes of the damper to slip. Such slippage of course absorbs energy.

Without the vibration damper there is very little resistance to the torsional vibration as steel, within its elastic limits, is perfectly elastic so that any energy imparted to it that will set it in vibration will keep it vibrating for a considerable time. A frictional damping device, such as the Lanchester vibration damper used on the Packard, will absorb the energy stored in the crankshaft by fluctuations in the torque and thereby minimize the vibration.

The vibration damper which has been used on the front end of the Studebaker crankshaft for several years is identical in principles of construction although, as before stated, the details are slightly changed. On the Studebaker the vibration damper also acts as an overrunning clutch for the starter drive.

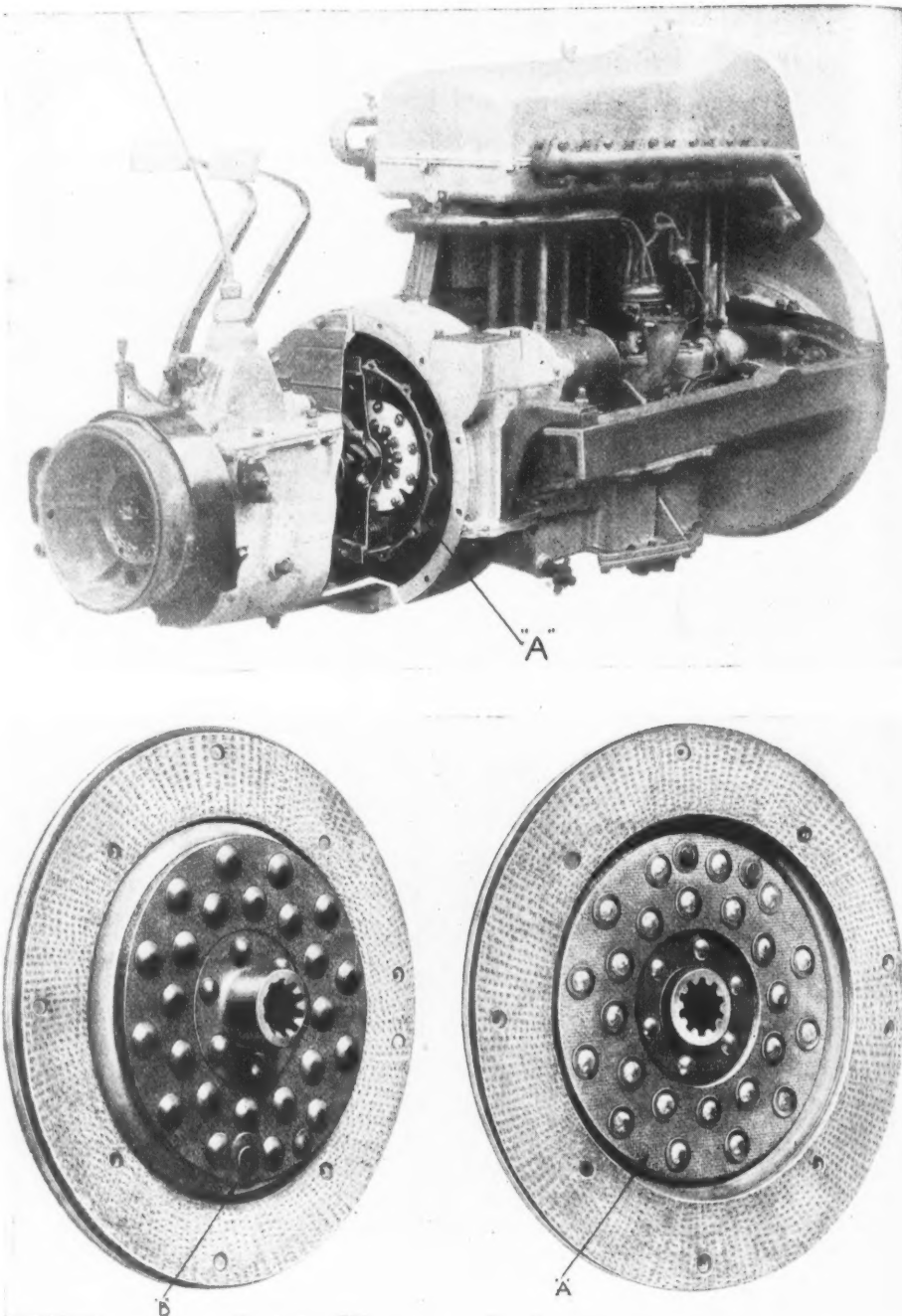
2—Describe operation of the so-called Traffic Transmission used on new Chandler car.

2—A descriptive and outline of the operation of this transmission was printed in MOTOR AGE September 27th, 1923, on page 14.

Adjusting Stromberg Carbureter on Buick

3—We have a model C-37 Buick four 1915, 3 $\frac{1}{2}$ x 5. We have installed an L-2 Stromberg carbureter on this car and we notice spark knock quite badly when accelerating even after the carbon has been removed. With the old model carbureter the engine could have almost any amount of carbon and this knock was never noticeable. No change other than carbureter has been made on this engine.

3—The symptoms described indicate that the mixture is too lean. To properly adjust the Stromberg carbureter, open the idle adjustment one turn, then start engine and open throttle to a speed



Vibration damper of the late series Franklin cars. The rubber cushion forms part of the clutch disks. A is a rubber mat and B a weight for balance

equivalent to 20 to 25 m.p.h. With the throttle open this amount, adjust the high speed. The high speed adjustment is correctly set when the engine reaches the point where it runs the fastest on a given throttle opening which, as before stated, should be at a point 20 to 25 m.p.h. road speed.

After a high speed adjustment has been made as above, retard the spark to about $\frac{1}{4}$ advance and close the throttle and adjust the low speed.

To make sure that the carbureter is the correct one for the car, would advise that you remove it and measure the venturi and the air bleeder. The recommended equipment is a 27/32 venturi and a No. 52 air bleeder.

4—What speed in m.p.h. of car or r.p.m. of motor will a Chevrolet superior model stand for any given time with present oiling system and with Dodge valves installed?

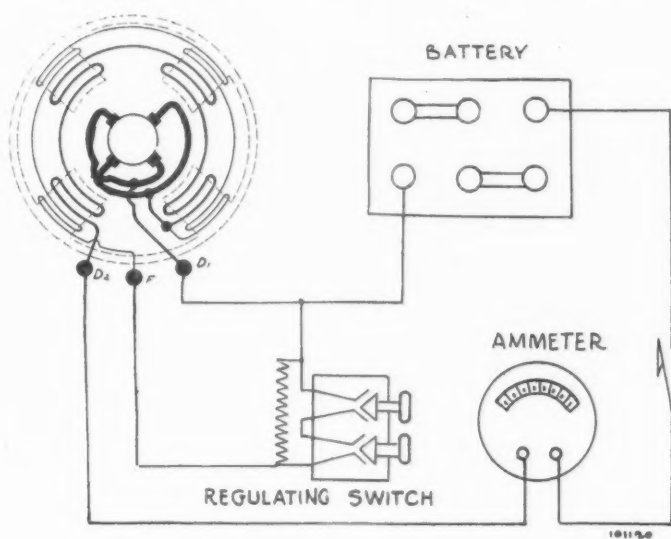
4—It is impossible for us to definitely answer this question.

5—What speed in r.p.m. will this motor run up to go 45 m.p.h. in second gear with standard gear ratio? Also at this rate what speed will it travel on high gear both in r.p.m. of motor and m.p.h. of car?

5—Assuming a second speed gear ratio 6.44 to 1 the engine would have to turn 3255 r.p.m. to negotiate 45 m.p.h. in second.

Assuming that the engine is capable of 3255 r.p.m. the speed in high gear with 3.66 to 1 ratio would be 78 plus miles per hour.

Charging Batteries With an Apelco Dynamo



Q—We would like to have some information regarding Apelco dynamo model A-7 made by the Apple Electric Company of Dayton, Ohio. Is it possible to use this dynamo to charge a 6 volt storage battery using a gasoline engine for power. This generator was originally used on an Auburn Six car. It has three terminals which are marked D-2, F and D-1.—D. E. Oplinger, Route No. 4, Box 12, Jewell, Kansas.

A—We are showing a wiring diagram which gives the connections to make to charge a battery with this machine. The regulating switch is any two gang lighting switch with iron or nickel wire resistance connected at the back of the switch as shown. The resistance coil across one of the switch gangs should have twice as much wire in it as the one across the other gang. We have also shown an ammeter and a switch in the circuit.

In starting up both buttons of the regulating switch should be pushed in so as to short out the resistance. Then, before the generator is connected, the switch should be closed for an instant to allow the battery current to run the generator as a motor. It should then be driven in the same direction by the engine.

When running as a motor the ammeter should show discharge current and when the engine drives it at faster speed in the same direction the reading on the ammeter should be in the other direction.

If the charging current is too high the lower switch button can be pulled out and if this does not cut the current down enough then the upper button can be pulled out. For the greatest reduction in current switch buttons should be pulled out. Then if the current is not reduced enough it means that a different resistance must be made up, using either smaller wires or a greater length of wire.

This machine is a motor generator which originally operated on 30 volts when being used as a starter and operated on 6 volts when generating. Accord-

ingly, while it was designed for 6 volt continuous operation, it may be possible to charge a 12 volt battery or two 6 volt batteries in series if desired.

However, when you first try the machine with more than one 6 volt battery at a time, it would be well to watch it closely to see if it is becoming very hot as excessive heat generated in the field windings may be transmitted to the armature and cause the solder to throw out. It is probably perfectly safe, however, on 6 volts up to 15 amperes.

Another generator which works very well for this purpose is an ordinary Ford, with 3rd brush type regulation. It has a good output and may not take as much power as the older machine you are figuring on using.

INSULATING THE MAGNETO IS A NEW ONE ON US

Q—In reading the Readers' Clearing House section of Motor Age of January 3rd, 1924, we notice an article in which John A. Dollison of Quaker City, Ohio asks a question. He wants to know what is wrong with a Bosch D.U. 4 magneto when it works all right when laid on a steel plate on the test bench, but will not work on the car. We had one that acted the same way and overcame the condition by putting a thin piece of rubber the size of the magneto base between the base and the bracket on which the magneto sets.—Magneto Jim of Illinois.

The only way that we can figure that a piece of rubber under the magneto would make it work would be in case the interrupter terminal or the wire going to the grounded switch had become grounded. Even so we do not see how the rubber would correct the condition, for the holding screws going into the base or the clamp band over the top of the magneto would ground it. If the magneto could be installed without a ground of any sort then it might fire even if an accidental ground existed in the wire from interrupter to stopping switch. The second spark would find a way back in spite of the layer of rubber.

Flat Rate on Timing a Willys-Knight

Q—Give the correct valve timing on a Willys-Knight 1920, also give the flat rate price or time allowance on this job to retime the valves.—Zeeland Electric Service, Zeeland, Mich.

The intake opens 15 degs. after top dead center and closes 20 degs. after bottom dead center. The exhaust opens 50 degs. before bottom dead center and closes 8 degs. after top dead center. It is sufficient to time by the exhaust closing which is 8 degs. after top dead center and the exact position of the engine can best be determined by referring to the marks on the flywheel. On the 1920 car, which is model 20, the time allowance is 4¼ hours.

The work involves removing radiator, exhaust manifold and front crankcase cover in order to get at the timing chain. The exhaust manifold is removed so that a light may be dropped down inside the cylinder through the spark plug opening and with the engine properly set as indicated by the flywheel markings a dim streak of light should be seen when looking in at the exhaust port.

THE DIRECT CURRENT TRANSFORMER IS NOT YET INVENTED

Q—We would like to know if it is possible to obtain or make a transformer to step down 110 volts direct current to 8 volts, thereby increasing the amperage and making a constant potential charger? Any information available will be appreciated, as we are using at present a 110 volt, 20 ampere generator for charging batteries.—Zeeland Electric Service, Zeeland, Michigan.

Direct current cannot be transformed from one voltage to another and, when high voltage, direct current is the only thing available and a low voltage is needed, it is necessary to use a motor generator where the motor is suitable for the high voltage and the generator is capable of delivering the low voltage required.

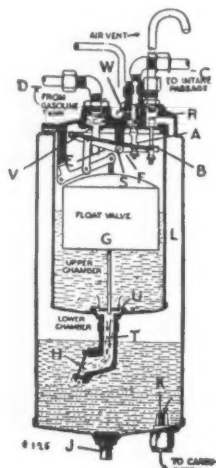
On the other hand 110 volts A. C. current can be transformed to a lower voltage, but is not suitable for charging batteries. For this reason the commonly used rectifiers must have some means of first stepping the voltage down and then of rectifying it. When this is done, however, the current output is usually quite limited, either by a bulb of some sort which will only carry a limited current, or by the action of vibrator contacts which are also limited in current capacity.

Your 110 volt generator will be very good for charging batteries if you are able to keep from 10 to 14 batteries on the line at a time. If you use the generator for nothing but charging and only have a few batteries on the line, you can get a rheostat to put in the shunt field which will cut down the generator voltage to any value required, so that the set will be efficient.

Vacuum System Fails in Cold Weather

Q—I have a Kohler lighting plant that has been in use about 18 months, with underground storage tank with Stewart vacuum fuel system, which has worked perfectly until now. It refuses to function properly in cold weather, but works nicely in warm weather. Can you please locate my trouble for me? Main supply tank is 3½ feet below vacuum system.—J. W. Finklea, Hyman, S. C.

A—You do not state definitely what symptom the system shows, which makes it difficult for us to supply an intelligent diagnosis. If your trouble is lack of fuel in the carburetor it may be due to a punctured vacuum tank float, a leaking atmospheric valve located at the upper part of the vacuum tank assembly, or a clogged strainer in the vacuum tank head. The vacuum tank strainer is lo-



Sectional view of Stewart vacuum tank

cated on the top of the tank and is an extension of the elbow marked "from gasoline tank".

If the trouble with the tank is too much gasoline or flooding of the tank or carburetor, look for a storage tank filler cap with an obstructed vent hole. It is necessary to have a vent hole in the storage tank as otherwise an excess amount of gasoline will be drawn into the tank and if the tank itself is of thin metal it may collapse. The flapper valve marked H at the bottom of the inner tank assembly may be examined and cleaned.

If you unscrew this from the bottom of the inner tank assembly it may be tested for leakage by sucking in on it from the top and noting whether there is any leakage. If the valve is holding the tongue will adhere to the end of the casting when suction is created by drawing in or inhaling. A punctured float is easily detected because the float will be heavier than normal and by shaking it the presence of gasoline is easily noted.

Insufficient Heat to Manifold

You state that the system does not function properly in cold weather but we do not know whether you refer to the fuel system only or to the fuel distribution system of the engine. It is very probable that the engine does not work

correctly in cold weather due to insufficient heat to the inlet manifold.

One method of improving the performance, providing a good quantity of gas is first present in carburetor, is to loosen the fan belt or disconnect the fan entirely, or better still install a hot spot on the inlet manifold. If you will write and tell us exactly the symptoms of the engine we shall be pleased to offer further suggestions.

In addition to the suggestions offered above, it is advisable to also check the bottom of the pipe that enters the fuel storage tank which goes to the vacuum tank. This and all pipe strainers should be examined for the accumulation of ice and water especially those in the vacuum tank, the storage tank and the carburetor.

GARAGEKEEPER'S RESPONSIBILITY

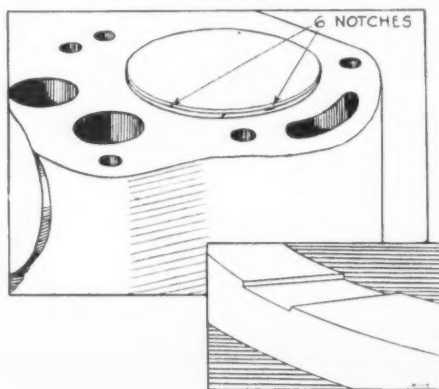
Q—Would like to know what the laws are in regard to storage of cars. Do we need a license? Are we responsible in case of fire or theft? Does a sign "Not responsible in case of fire or theft" exonerate the dealer? Or would a storage ticket with these words printed on it exempt us in case of theft or fire? Would appreciate any information you can give us on this matter. We have all back numbers of Motor Age for two years.—Rode Motor Co., Ryder, No. Dakota.

I do not find in your state laws that a license is needed to conduct a storage of cars. Make sure by asking your county clerk. In case of fire or theft you are responsible if your negligence has made either possible. The stock sign that you refer to does not relieve the garage-keeper of his own negligence. The provision printed on your storage ticket might prove valuable in a particular case with a particular set of facts.

STOPPING A KNOCK WITH NOTCHES IN UPPER PISTON RINGS

Q—We note in your issue of Feb. 7th, 1924, an inquiry from the Stucke Garage of Beardstown, Ill., in regard to a knock in a Ford engine after installing new rings. This is a common occurrence in a Ford engine after an installation of new rings and has cost the garage men thousands of dollars in lost time and labor trying to correct this, and the poor grease hound is not to blame for this rap. We accordingly offer a solution for this trouble as this solution has proven successful in our shop.

We agree with Motor Age that the cause of this rap is the explosion pressure compressing the top ring. This occurs only in a worn cylinder and we have never encountered trouble in a new or reground engine. It is always in the second or third cylinder for the following reasons:



How to Figure Compression Ratio

Q—Give information concerning the meaning and calculation of compression ratio of a gas engine. For example the compression ratio of a Cadillac V 8 is 5.10 and of a Hudson Super Six is 4.76.—McQuiddy Brothers Machine Co., Marshall, Missouri.

The compression ratio of any engine is the space in cubic inches in the cylinder when the piston is down divided by the space in the combustion chamber when the piston is up. A method of measuring this in any engine was very thoroughly explained on page 43 of the July 5th, 1923, issue of Motor Age, and a copy of this page is being sent to you by separate letter. Briefly the method was to use oil to fill up the combustion chamber in the two positions of the piston.

AN UNKNOWN SUBSCRIBER FROM HAZEN, NORTH DAKOTA

Q—We have a 1915 Dodge car which has a North East starter and generating system. It works fine as a starter but after the motor starts the generator will not charge unless the starter switch is held closed. What could be the cause? Please show wiring diagram.—A Subscriber.

If the subscriber from North Dakota would give his name and address we would be able to give him information promptly by letter. The diagram required was printed on page 50 of the Feb. 7th, 1924, issue of Motor Age, and a great deal of information in regard to testing the system was also given. The trouble is possibly due to an open circuit in the shunt winding of the cut out switch or to failure to ground the number four terminal.

The Ford engine in common with other engines runs with a richer mixture on the end cylinders due to gas inertia. The end cylinders, having a richer mixture, fire slower than the middle cylinders, and the maximum pressure does not occur until the top ring has moved down into the cylinder. Now for the cure.

Use a plain one-piece ring and notch with a fine file in six places on one edge. Make the notches about 3-16-inch wide and 1-64-inch deep. Install in the top groove with the notches UP, and it will be found that the knock is no longer present. This equalizes the pressure by allowing gas to get in behind the rings and while it impairs the efficiency of the top ring we have never had the slightest trouble on this account.—C. E. Teigler, Teigler Brothers Garage, Dayton, O.

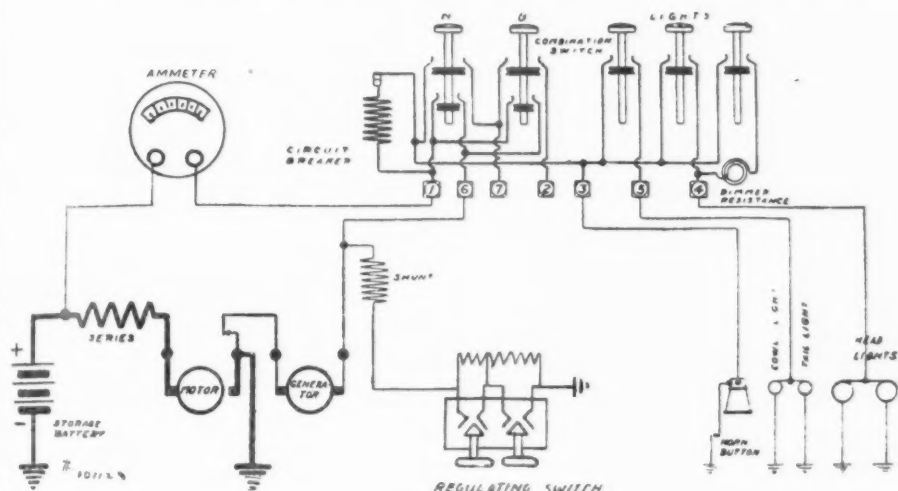
A.—Motor Age wishes to express appreciation for the suggestion above given. Where the owner does not feel like having the cylinder block reground and new pistons and rings fitted, it is doubtless a remedy which will give satisfaction and save time and money for the repair shop.

HUPMOBILE VALVE TIMING

Q—Give by return mail complete valve timing of the Hupmobile model R.—Fred Gilley, Gilley Garage, Patoka, Illinois.

At 12 degrees after upper dead center the exhaust valve is supposed to close and the intake valve to open. The intake valve closes 44 degrees after bottom dead center while the exhaust valve opens 44 degrees before bottom dead center.

The Hack Saw Routs the Distributer and a Switch Replaces the Regulator



Q—We have a Delco motor generator which variable resistance control. It was used on a model C-36 1915 Buick but was damaged in a wreck so that the distributor was put out of commission. We have cut off the distributor with a hack saw and intend to use the starting motor and generator only in connection with a magneto on a model D-4 Buick truck. Would you recommend a resistance unit or a relay for voltage regulation? What size resistance would be best? Can you give us a wiring diagram for it?

We certainly wish to thank you for your information for it has certainly helped us out. If there is any charge we will be pleased to remit.—S. W. Moebius, Frisco, Utah.

A—There is no charge for this service which we are only too glad to supply to our subscribers. We are showing a wiring diagram of the 1915 Buick which we have changed in accordance with your requirements. We have omitted the ignition coil and distributor entirely and have also left out the dry cells which were used in connection with this battery ignition, in case of emergency.

We have shown the shunt field of the generator connected to ground through a two gang switch. This is just an ordinary lighting switch except that across the back of it there are two resistance coils. These may be made up of iron or nickel wire and you may find that ordinary stove pipe wire will be satisfactory. One of these resistances should have twice as much wire in it as the other, as indicated in the diagram.

At low speed both switch buttons should be pushed in so as to short out both resistances and give the maximum generator output.

For best results it would be advisable to install an ammeter which is also indicated in this diagram. Then as the car speed increases and the charging current comes up to twelve or fifteen amperes it may be advisable to pull out one of the switch buttons so as to throw resistance into the circuit of the shunt field winding.

Pulling out the left button will put in

some resistance. Pulling out the right button will put in twice as much resistance and pulling out both buttons will put in three times as much resistance, so that you have considerable degree of regulation.

If the charging current is too high with both buttons pulled out it shows that a greater length of wire is needed in each resistance coil or else a finer wire should be used.

COARSE STEEL WOOL AND ELBOW GREASE BEST RUST PREVENTER

Q—We have a car which had the body burned off and it is somewhat rusty. Is there any solution which could be used to remove this rust.—Clarence Zimmerman, Venango, Nebr.

There are solutions which are available for this purpose but it is usually necessary to immerse the article in the solution and leave it for a considerable time. This would be impracticable with an object as big as a chassis or car. We feel that what you should do is to use coarse steel wool which can be obtained in any hardware store and rub the rust spots and other portions of the car until a good smooth surface is obtained. A coat of paint should then be applied to protect the metal parts from the action of weather.

LIKES TROUBLE

Q—I am a reader of Motor Age and enjoy reading the columns of those who are in trouble. This time I am one of them and while I have been in the business for some time this problem has me guessing.

The car in our shop is a 1921 Paige 6-44 model. We know that this car can and should do more than 47 miles per hour. Compression is good on all cylinders. The valves have been ground and a new head gasket installed. The tappets were adjusted to .003 clearance and the porcelains on the A. C. plugs are burnt red. The valve timing has been checked and found to be O. K. The coil was tested and a new condenser installed. The ignition was timed and the points adjusted by a reliable auto electric station.

The car has good pick up until 47 miles per hour and then begins to miss as if it would go to pieces. Do you think the trouble is in the valves not closing fast enough or due to trouble in the ignition points? The ignition is Atwater Kent with a brush as a breaker. I forget the model of the ignition. A different carburetor adjustment has been tried but no improvement. The throttle opens all the way and the gas line and screens are clean.—H. A. from Indiana.

You can find out whether the trouble is due to ignition or not by checking the spark at each cylinder. To do this get a heavy piece of brown paper and roll it up into a tube about 3 feet long and 2 or 3 inches in diameter. Then run the engine and take one of the spark plug wires off of the plug and lay it on the engine so that the spark will jump about one-quarter inch. Hold one end of the tube near the spark which is jumping and put your ear at the other end of the tube. The ear is more sensitive in distinguishing a miss in a spark than the eye. Then when you are listening to the spark have someone speed up the engine and raise it past the point where the trouble would ordinarily be encountered.

If at a speed which you assume is about 47 miles per hour the spark starts to miss then you know that the trouble is due to ignition, but if you can race the engine as fast as it will go without having any missing then it is time to look elsewhere. This check should be made at all cylinders.

Another possibility is that the trouble is due to a cracked porcelain although trouble of this nature will usually show up by the engine missing on a heavy pull. You can try this by having the car in high gear and then open the throttle quickly. The test is also a good one if made just at the foot of a hill so that the car has to pull with maximum effort available. If the trouble is not due to ignition it would seem as if a valve is sticking at high speed or as if one or more of the valve springs are weak. If the ignition seems to be O. K. it might be advisable to put in a new set of valve springs in case the valves do not seem to be sticking. If the trouble is due to ignition you may find that the interrupter points are set too far apart. The proper setting for the points on this type C. A. Atwater Kent ignition is point .005 in. Another suggestion in regard to the valve springs is that instead of buying a new set that you try washers under the springs so as to get greater compression from them.

Read the discussion on success and what it is made of in the article "Good Merchants Not Ready Made" on page 9. In this article a number of leading distributors tell what they think is wrong with the foundation of the industry.

How to Make and Use a Generator Test Bench

The Best Equipment Is Usually Made by Specialists. A Handy Man Around the Shop, However, Can Often Use Spare Time to Advantage by Assembling Good Parts to Make a Creditable Piece of Equipment

WE OFTEN get requests from the readers of our Clearing House Department for information on building a test bench. Under some circumstances it may pay to undertake this work but more often money, time and worry would be saved if information were obtained from the makers of testing equipment as to complete benches which they furnish, for a bench is usually available to suit the needs of any shop. The factory building equipment of this sort can put it out with better appearance and usually at a cost which is often less than labor and material would amount to.

In some cases, however, it may pay to build the testing equipment, as for example in the winter months, when the men in the shop might be idle part of the time. This time which would otherwise be a dead loss, can be utilized for putting the shop equipment in shape for the spring rush.

Fig. 1 shows the general appearance of a test bench suitable for the average shop. If desired it can of course be made longer with the extra length added at the right and a vise and growler for testing armatures may be installed. An arbor press and small lathe would also go well in the electrical shop and might be put on the extension of the bench.

Operation of the Bench

The generator to be tested is first put in the clamping stand and wires from the terminals on the switch board are attached. The terminals are marked plus and minus but if the machine is of the grounded type, one of these goes to the frame of the machine.

If there is a cutout on the generator itself, then the cutouts on the bench will not be needed so that the cutout shoring switch should be closed. Then, if the machine is a 6 volt one, the switch at the right is thrown to the right while if it is a 12 volt generator the switch is thrown to the left.

Closing the cutout on the machine will cause it to take current from the battery used in connection with the bench and run as a motor. In practically all cases it should then be driven in the same direction. About the only exceptions of which we know are old Gray and Davis generators built with a strong boosting series field. When these are run as motors they reverse the residual magnetism instead of forming it in the right direction. These are, however, hardly ever encountered at this time.

The Way the Cutouts Work

If there is no cutout on the machine, then it is desirable to use one on the bench, and by merely throwing the right

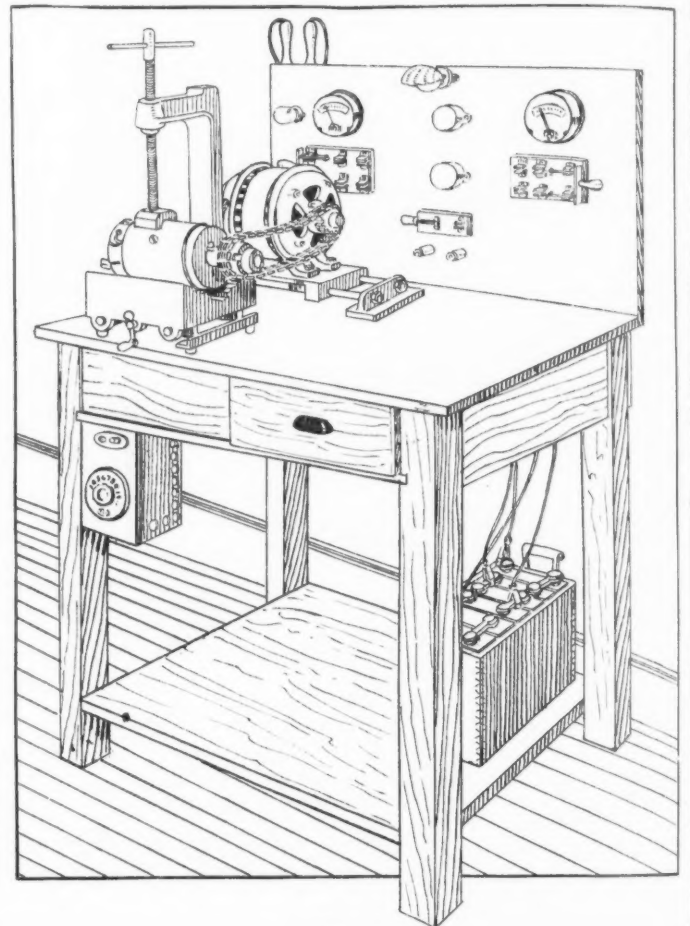


Fig. 1
General appearance of electrical test bench

hand switch to the proper position, the proper cutout will also be thrown into the circuit. Then if it is desirable to motor the generator it is only necessary to close the cutout shoring switch for an instant. When the driving motor is used to run the generator the proper cutout will function and connect the

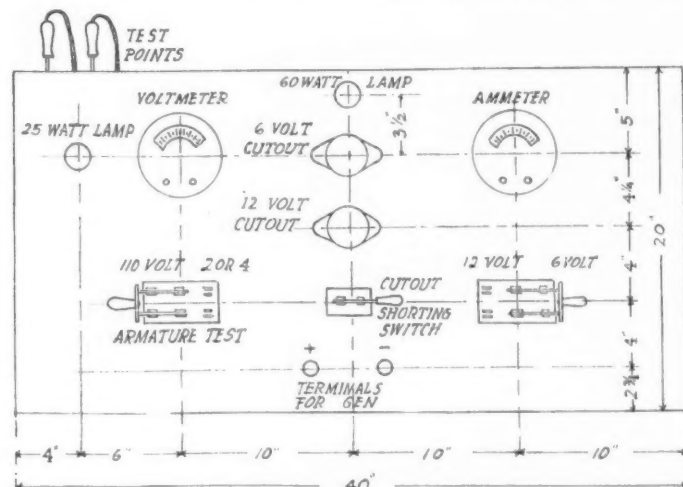


Fig. 2
Location of test bench instruments

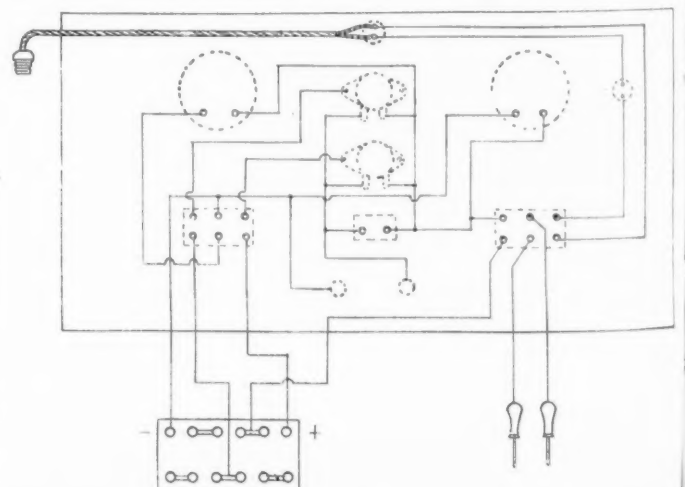


Fig. 3
Wiring of back of instrument board

generator to the battery, the charging current showing up on the ammeter just as it would on the car.

The voltmeter shows the battery voltage and a rise in voltage will be seen when the generator starts to charge, the amount of rise depending on the battery condition. The 60 watt lamp at the upper center part of the switch board is intended to be provided with a green half shade so as to light up the bench. The 25 watt lamp at the left should be a red one, and is in circuit with the test points which are used in testing for grounds, also for locating circuits of unequal resistance as shorts in armatures.

The voltmeter, while normally showing the battery voltage, may be made to show the generator voltage only by leaving the right hand switch open, that is in the center position, while the generator is connected and driven with the center or cutout shorting switch closed. If the generator, for example, will not cut in this makes it possible to determine exactly what voltage it is producing, whether it is .1 or .5 or whatever it may be. If the generator is normal this test must be made with care for at high speeds the 6 volt generator should develop perhaps 30 or 40 volts and might injure not only itself but the voltmeter.

The left hand switch is used in connection with the test points. When thrown to the left the test points may be touched together and the red lamp will light up on 110 volts. One test point may then be touched to an armature shaft and the other to the commutator to see if commutator or winding is grounded. The same test can be made on fields to see if they are grounded, making a connection to the field coil and the frame of the machine, first making sure that any intentional grounds are disconnected.

Low Voltage Test with the Test Points

When the left hand switch is thrown to the right we have the test points connected to one or two cells of the battery through the ammeter. If the right hand switch is in the 6 volt position we will have 2 volts acting and if it is thrown to the 12 volt side we will have 4 volts at our test points. With 2 volts at the points the resistance of the bench wiring is usually sufficient so that the points may be touched and the ammeter will only show about 25 amperes, although theoretically this is a short circuit.

Under these circumstances we can use the points on adjacent commutator bars and should get results of perhaps 15 amperes as the points are shifted from one pair of bars to another. With this test the same readings all around the commutator show that the armature is O. K. A very low reading indicates an open circuit and that the current has to travel through all the other coils in the armature. An unusually high reading on the other hand shows a short circuit.

These tests are not absolutely conclusive and can not be used with success on starting motor armatures on account of their very low resistance. It, however, serves as a valuable check on other methods of testing and may with care locate shorts and opens without the co-operation of other methods. Some variations, however, will be encountered even on a good armature on account of variations in manufacture.

While Fig. 1 shows the appearance of the bench, Fig. 2 shows the switch board layout and the approximate location of the various instruments. After the meters, cutouts, switches, terminals and sockets have been installed on the front of the board it may be turned over and wired. The wiring will then have to be as shown in Fig. 3.

This gives the appearance from the back so all you have to do is to wire it up the way it looks and it will do the things we have mentioned.

The main items of equipment needed are as follows:

- 1—driving motor with speed control
- 1—vise for holding generators
- 1—voltmeter 0-15 direct current
- 1—ammeter 30-0-30 direct current
- 1—6 volt cutout
- 1—12 volt cutout
- 2—lamp sockets
- 1—green glass half shade
- 2—binding posts
- 2—10 ampere double pole, double throw switches
- 1—10 ampere single pole, single throw switch
- 1—pair of test points
- 1—12 volt battery
- 1—plug for connecting to 110 volt socket. Approximately 50 ft. of No. 14 ignition cable for wiring up bench
- 6—15 ampere snap clips for connecting battery and making connections to generator.

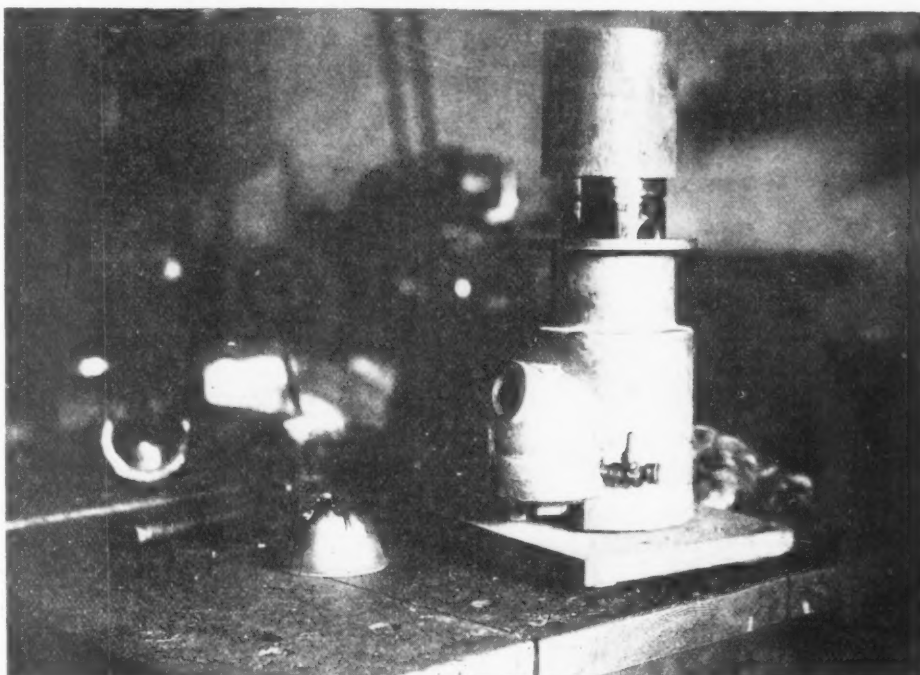
Circularity Is the Thing

A MACHINE shop in Lincoln, Nebraska, which makes a specialty of regrounding cylinders has hit upon a novel and effective way to prove to skeptical patrons the perfect job of cylinder reconditioning possible with their equipment.

Upon a bench in the shop an old cylinder head has been mounted and with it the piston to match. The piston does not have rings and the cylinder has been reground. The cylinder is also supplied with a pet cock through which air is admitted or released to permit raising or lowering of the piston.

The clearance between the piston and cylinder walls is five thousandths of an inch. The piston is loose enough to move easily back and forth with the fingers but the fit is so close after all, and the circle so near perfect, that the piston can be twirled and spun easily.

The iron weight, which is a piece of cold rolled shafting, is 5 in. in diameter and weighs 21½ pounds. When set upon the piston (without rings) and the camera given a 10 second exposure, the piston with this load did not fall more than ¼ of an inch.



Many customers are inclined to think that the fit between piston and cylinder wall has to be very tight. This shows them so long as the circle is perfect the

fit need not and should not be too tight and is a means of driving home the argument for circularity, rather than close fit.

(This list comprises trucks distributed on a national basis)

Ru—Russel
Sa—Salisbury
Sh—Sheldon
Ti—Timken
To—Torbensen
Wa—Walker
Wi—Wisconsin
Ch—Chain
DR—Double Reduction
IG—Internal Gear
SB—Spiral Bevel
SP—Straight Bevel
WO—Worm

Current Motor Truck Specifications—Continued

(This list comprises trucks distributed on a national basis)

MAKE AND MODEL	Tons Capacity	Price	ENGINE		Clutch Make	Gearset Make	REAR AXLE		TIRES		MAKE AND MODEL	Tons Capacity	Price	ENGINE		Clutch Make	Gearset Make	REAR AXLE		TIRES	
			Make and Model	Bore and Stroke			Make and Model	Final Drive	Front	Rear				Make and Model	Bore and Stroke			Make and Model	Final Drive	Front	Rear
Maccar.....EX	1 1/2		Wi-SU	4 x 5	B-L	B-L	Se-1526c	SB	34x5n	34x5n	Selden.....53B	2 1/2	3350	Co-LA	4 1/2 x 5 1/2	B-L	B-L	Ti.....	WO	36x4k	36x7k
Maccar.....LI	1 1/2		Wi-TAU	4 x 6	B-L	B-L	Ti-6460	WO	36x4	36x5	Selden.....70B	3 1/2	4175	Co-LA	4 1/2 x 5 1/2	B-L	B-L	Ti.....	WO	36x5k	36x10k
Maccar.....HT	2 1/2		Wi-TAU	4 x 6	B-L	B-L	Ti-6560	WO	36x4	36x4d	Selden.....73	3 1/2	4475	Co-B5	4 1/2 x 6	B-L	B-L	Ti.....	WO	36x5k	36x10k
Maccar.....H13			Wi-UAU	4 1/2 x 6	B-L	B-L	Ti-6560	WO	36x4	36x5d	Selden.....90A	5	4950	Co-B5	4 1/2 x 6	Del	B-L	Ti.....	WO	36x6k	40x12
Maccar.....M2			Wi-UAU	4 1/2 x 6	B-L	B-L	Ti-6666	WO	36x5	36x6d	Service.....25	1 1/2		Bu-WTU	3 1/2 x 5 1/2	B-L	B-L	Ea-1000	SB	34x5n	34x5n
Maccar.....G1			Wi-RBU	5 x 6	B-L	B-L	Ti-6760	WO	36x6	40x6d	Service.....33	1 1/2		Bu-GBU	4 x 5 1/2	B&B	B-L	Ti-6352	WO	34x3 1/2	34x6
MacDonald.....O	3	\$5500b	Bu-WTU	3 1/2 x 5 1/2	B-L	B-L	**Own	IG	36x6	36x10	Service.....42	2		Bu-EBU	4 1/2 x 5 1/2	B&B	B-L	Ti-6460	WO	36x4	36x7
MacDonald.....A	7 1/2	8000b	Bu-YTU	4 1/2 x 6	B-L	B-L	**Own	IG	40x7	40x14	Service.....61	3		Bu-EBU	4 1/2 x 5 1/2	B&B	B-L	Ti-6560	WO	36x4	36x8
Mack.....AB	1 1/2	3000	Own	4 x 5	Own	Own	Own	Ch	36x4	36x3 1/2d	Service.....81	4		Bu-YBU	4 1/2 x 6	B&B	B-L	Ti-6666	WO	36x5	36x10
Mack.....AB	1 1/2	3150	Own	4 x 5	Own	Own	Own	DR	36x4	36x3 1/2d	Service.....103	6		Bu-YBU	4 1/2 x 6	B&B	B-L	Ti-6760	WO	36x6	40x12
Mack.....AB	1 1/2	3300	Own	4 1/2 x 5	Own	Own	Own	Ch	36x4	36x4d	Signal.....NF	13 1/2		Co-J4	3 1/2 x 5	B-L	B-L	Ti-6352	WO	34x5n	36x6n
Mack.....AB	2	3750	Own	4 1/2 x 5	Own	Own	Own	DR	36x4	36x4d	Signal.....H	21 1/2		Co-K4	4 1/2 x 5 1/2	B-L	B-L	Ti-6460	WO	34x4	36x6
Mack.....AB	2 1/2	3100	Own	4 1/2 x 5	Own	Own	Own	Ch	36x4	36x4d	Signal.....J	31 1/2		Co-K4	4 1/2 x 5 1/2	B-L	B-L	Ti-6560	WO	34x4	36x8
Mack.....AB	2 1/2	3850	Own	4 1/2 x 5	Own	Own	Own	DR	36x4	36x4d	Signal.....M	5		Co-L4	4 1/2 x 5 1/2	B-L	B-L	Ti-6660	WO	36x5	40x10
Mack.....AC	3	4950	Own	5 x 6	Own	Own	Own	Ch	36x5	40x6d	Signal.....R	7 1/2		Co-B5	4 1/2 x 6	B-L	B-L	Ti-6760	WO	36x6	40x12
Mack.....AC	3	5500	Own	5 x 6	Own	Own	Own	Ch	36x6	40x6d	Standard.....75	1 1/2	1330	Co-N	3 1/2 x 5	B-L	B-L	Ti-6250	WO	36x5n	36x5n
Mack.....AC	3	5750	Own	5 x 6	Own	Own	Own	Ch	36x6	40x12	Standard.....1 1/2	2 1/2	1695	Co-N	3 1/2 x 5	B-L	B-L	Ti-6352	WO	34x3 1/2	34x5
Mack.....AC	3	6000	Own	5 x 6	Own	Own	Own	Ch	36x7	40x7d	Standard.....2 1/2	2 1/2	2795	Co-K4	4 1/2 x 5 1/2	B-L	B-L	Ti-6560	WO	36x4	36x8
Mack.....AB	3	3100	Own	4 1/2 x 5	Own	Own	Own	Ch	36x4	36x4d	Standard.....3 1/2	2 1/2	3645	Co-L4	4 1/2 x 5 1/2	B-L	B-L	Ti-6666	WO	36x5	36x12
Mack.....AB	3	4950	Own	5 x 6	Own	Own	Own	Ch	36x5	40x5d	Standard.....5	5	4495	Co-B5	4 1/2 x 6	B-L	B-L	Ti-6760	WO	36x6	40x14
Mack.....AC	3	5500	Own	5 x 6	Own	Own	Own	Ch	36x6	40x6d	Star.....	3 1/2	405	Co-Spec	3 1/2 x 4 1/2	Own	War	Ti Spec	SB	30x3 1/2	30x3 1/2
Mack.....AC	3	5750	Own	5 x 6	Own	Own	Own	Ch	36x6	40x12	Sterling.....	11 1/2	3240	Wa-FU	4 x 5 1/2	B-L	B-L	Ti-6460	WO	36x3 1/2	36x5k
Mack.....AC	3	6000	Own	5 x 6	Own	Own	Own	Ch	36x7	40x7d	Sterling.....	11 1/2	3440	Wa-FU	4 x 5 1/2	B-L	B-L	Ti-6560	WO	36x4k	36x6k
Mason.....	1 1/2	1295	He.....	1 x 5	Hoo	War	FL	SB	31x5n	31x5n	Sterling.....	21 1/2	3700	Wa-CU	4 1/2 x 5 1/2	B-L	B-L	Ti-6560	WO	36x4k	36x6k
Master.....	1 1/2		Bu-WTU	3 1/2 x 5 1/2	Ful	Ful	Ti-5511	SB	33x5n	33x5n	Sterling.....	21 1/2	4750	Wa-DU	4 1/2 x 6 1/2	H-S	Own	Ti-6660	WO	36x5	40x5d
Master.....	2 1/2		Bu-OU	4 1/2 x 5 1/2	Ful	Ful	Ti-6460	WO	34x4	34x6	Sterling.....	21 1/2	5400	Wa-EU	5 x 6 1/2	H-S	Own	Ti-6760	WO	36x6	40x6d
Master.....	2 1/2		Bu-ETU	4 1/2 x 5 1/2	Ful	Ful	Ti-6560	WO	34x4	36x8	Sterling.....	21 1/2	6000	Wa-EU	5 x 6 1/2	H-S	Own	Ch	36x6	40x6d	
Master.....	2 1/2		Bu-YTU	4 1/2 x 6	B-L	B-L	Ti-6666	WO	36x5	40x10	Sterling.....	21 1/2	6500	Wa-EU	5 x 6 1/2	H-S	Own	Ch	36x6	40x6d	
Master.....	2 1/2		Bu-YTU	4 1/2 x 6	B-L	B-L	Ti-6760	WO	36x5	40x12	Stewart.....	16	1195	Ly-CT	3 1/2 x 5	Ful	SB	34x4 1/2	34x4 1/2		
Master.....	2 1/2		Bu-ATU	4 1/2 x 6 1/2	B-L	B-L	Ti-6760	WO	36x6	40x14	Stewart.....	15 1/2	1595	Bu-MU	3 1/2 x 5 1/2	Ful	Di-AW	IG	35x5n	35x5n	
Maxwell.....	4 1/2	1097	Own	3 1/2 x 4 1/2	Own	Own	Ti.....	WO	35x5n	35x5n	Stewart.....	9 1/2	1970	Co-N	3 1/2 x 5	Ful	Cl-ID	IG	34x3 1/2	34x6k	
Menominee.....	1	1650	Wi-SU	4 x 5	B&B	Det	Co-5200	SB	35x5n	35x5n	Stewart.....	7 1/2	2690	Bu-HTU	4 1/2 x 5 1/2	Ful	Cl-2D	IG	34x4k	34x8k	
Menominee.....	1 1/2	2000	Wi-CAU	3 1/2 x 5	Ful	Del	Wi-800G	WO	34x3 1/2	36x5k	Stewart.....	10 1/2	3590	Bu-YTU	4 1/2 x 6	Ful	Cl-3D	IG	36x5	36x12	
Menominee.....	1 1/2	2175	Wi-FAU	4 x 5	Ful	Del	Wi-800H	WO	36x3 1/2	36x5k	Stoughton.....	10 1/2	1185	Mi-410	4 1/2 x 5 1/2	Del	Cam	Co-5200	SB	34x4 1/2	34x4 1/2
Menominee.....	2 1/2	2875	Wi-TAU	4 x 6	Ful	Del	Wi-800J	WO	36x4	36x8	Stoughton.....	10 1/2	2400	Wa-BUX	3 1/2 x 5 1/2	B-L	B-L	Co-5200	SB	34x5n	36x6n
Menominee.....	2 1/2	4850	Wi-RAU	4 1/2 x 6	B&B	Det	Ti-6760	WO	36x6	40x12	Stoughton.....	10 1/2	2150	Wa-BUX	3 1/2 x 5 1/2	B-L	B-L	Sh-1501	WO	36x3 1/2	36x5
Moline.....	10	1995	Own	3 1/2 x 5	B&B	Own	To-A	IG	34x5n	36x6n	Stoughton.....	10 1/2	2490	He-CU3	4 x 5 1/2	B-L	B-L	Sh-103	WO	36x4	36x7
Nash.....2018	1-1 1/2	1595	Own	3 1/2 x 5 1/2	B&B	Det	Cl-ID	IG	34x4	34x5	Stoughton.....	10 1/2	3150	Mi-402	4 1/2 x 5 1/2	B-L	B-L	Sh-21	WO	36x5	36x5d
Nash.....4017F	2-2 1/2	2750	Bu-HU	4 1/2 x 5 1/2	B&B	Own	Own	IG	36x6	36x6	Thomart.....	20	1795	Hi-400	4 x 5 1/2	War	War	Ea-1000	SB	34x5n	34x5n
Nash.....3018	2-2 1/2	2150	Own	3 1/2 x 5 1/2	B&B	Det	Cl-2D	IG	34x4	34x7	Thomart.....	20	2100	Co-C4	4 1/2 x 5 1/2	Ful	Ful	Sh-103	WO	36x3 1/2	36x5
Nash.....5018	2-2 1/2	2250	Own	3 1/2 x 5 1/2	B&B	Det	Cl-2D	IG	34x4	34x7	Thomart.....	20	2700	Co-C4	4 1/2 x 5 1/2	Ful	Ful	Sh-21	WO	36x4	36x3 1/2
Noble.....A751	1 1/2	1395	Bu-WTU	3 1/2 x 5 1/2	Ful	Ful	Cl-300	SB	34x4 1/2	34x4 1/2	Thomart.....	20	3000	Co-LA	4 1/2 x 5 1/2	Del	Cot	Sh-31	WO	36x5	40x5d
Noble.....A21	1 1/2	1890	Bu-WTU	3 1/2 x 5 1/2	Ful	Ful	Sh-1501	WO	34x5	34x5	Thomart.....	20	4300	Co-B2	4 1/2 x 6	B&B	Cot	Sh-51	WO	36x6	40x6d
Noble.....B21	1 1/2	2995	Bu-CTU	3 1/2 x 5 1/2	Ful	Ful	Sh-103	WO	36x4	36x7	Thomart.....	20	4500	Co-B2	4 1/2 x 6	B&B	Cot	Sh-51	WO	36x6	40x6d
Noble.....D51	2 1/2	3150	Bu-ETU	4 1/2 x 5 1/2	Ful	Ful	Sh-21	WO	36x4	36x8	Titan.....	21 1/2	2700	Bu-HTU	4 1/2 x 5 1/2	B&B	Cot	Own	DR	36x4	36x8
Noble.....E71	2 1/2	3850	Bu-YTU	4 1/2 x 6	Ful	War	Sh-30	WO	36x5	36x10	Titan.....	21 1/2	3600	Bu-YTU	4 1/2 x 6	B&B	Cot	Own	DR	36x5	40x10
Old Reliable.....	2 1/2	3500	Wi-UAU	4 1/2 x 6	Ful	Ful	Sh-21	WO	34x4	36x8	Titan.....	21 1/2	4100	Bu-YTU	4 1/2 x 6	B&B	Cot	Own	DR	36x5	40x12
Old Reliable.....	2 1/2	4250	Wi-UAU	4 1/2 x 6	Ful	Ful	Sh-31	WO	36x5	36x12	Titan.....	21 1/2	1895	Co-N	3 1/2 x 5	Cov	Cov	Ru	IG	35x5n	35x5n
Old Reliable.....	2 1/2	5000	Wi-RAU	4 1/2 x 6	Own	B-L	Sh-51	WO	36x6	40x12	Titan.....	21 1/2	1995	Co-N	3 1/2 x 5	Cov	Cov	Ru-3000	IG	34x3 1/2	34x5
Old Reliable.....	2 1/2	6000	Wa-P	4 1/2 x 6 1/2	Own	Own	Ch	36x6	40x14	Titan.....	21 1/2	2145	Co-N	3 1/2 x 5	Cov	Cov	Ru-6000	IG	34x4k	34x8k	
Oldsmobile.....	1	1095	Own	3 1/2 x 5 1/2	B&B	War	To-0X2L	IG													

Current Motor Truck Specifications—Continued

(This list comprises trucks distributed on a national basis)

CANADIAN

MAKE AND MODEL	Tons Capacity	Price	ENGINE		Clutch Make	Gearset Make	REAR AXLE		TIRES		MAKE AND MODEL	Tons Capacity	Price	ENGINE		Clutch Make	Gearset Make	REAR AXLE		TIRES	
			Make & Model	Bore & Stroke			Make & Model	Final Drive	Front	Rear				Make & Model	Bore & Stroke			Make & Model	Final Drive	Front	Rear
Goifredson...20	14-1	\$2275	Bu-WTU	3 1/2 x 5 1/4	B-L	B-L	Ti-6250	WO.	34x5n	34x5n	National...FA	1	\$2450	Wa-BUX	3 1/2 x 5 1/4	B-L	B-L	Ti-6352	WO.	35x5n	35x5n
Goifredson...40	14-1	3290	Bu-GTU	4 1/2 x 5 1/4	B-L	B-L	Ti-6400	WO.	36x6n	38x7n	National...GA	1	2750	Wa-BUX	3 1/2 x 5 1/4	B-L	B-L	Ti-6400	WO.	34x4k	34x6k
Goifredson...50	21-1	3775	Bu-YTU	4 1/2 x 6	B-L	B-L	Ti-6560	WO.	36x4	36x8	National...HD	2 1/2	3750	Wa-CU	4 1/2 x 5 1/4	H-S	B-L	Ti-6560	WO.	36x5	36x10
Goifredson...80	4	4775	Bu-YTU	4 1/2 x 6	B-L	B-L	Ti-6560	WO.	34x5	36x12	National...NB	3 1/2	4750	Wa-DU	4 1/2 x 6 1/4	H-S	B-L	Ti-6560	WO.	36x6	36x12
Goifredson...100	5	5800	Bu-BTU	5 1/2 x 6 1/4	B-L	B-L	Ti-6760	WO.	36x6	40x14	National...OA	5	6150	Wa-EU	5 1/2 x 6 1/4	H-S	B-L	Ti-6760	WO.	36x6	40x14
Mapleleaf...AA	2	3600	Hi-400	4 1/2 x 5 1/4	Ful.	Ful.	Sh-103	WO.	36x4	36x7	Veteran...M	1 1/2	2699	Bu-CTU	3 1/2 x 5 1/4	B&B	Cot.	Sh-1501	WO.	34x5n	34x5n
Mapleleaf...BB	3	4050	Hi-500	4 1/2 x 5 1/4	Ful.	Ful.	Sh-21	WO.	36x4	36x1d	Veteran...P	2	3699	Bu-HTU	4 1/2 x 5 1/4	B&B	Cot.	Sh-21	WO.	36x4	36x7
Mapleleaf...CC	4	4800	Hi-200	4 1/2 x 5 1/4	Ful.	Ful.	Sh-31	WO.	36x5	36x5d	Veteran...R	3	4200	Bu-HTU	4 1/2 x 5 1/4	B&B	Cot.	Sh-21	WO.	36x4	36x7
Mapleleaf...DD	5	5625	Hi-1600	4 1/2 x 5 1/4	Ful.	Ful.	Sh-51	WO.	36x6	36x6d	Veteran...S	4	5395	Bu-YTU	4 1/2 x 6	B&B	Cot.	Sh-31	WO.	36x5	36x10

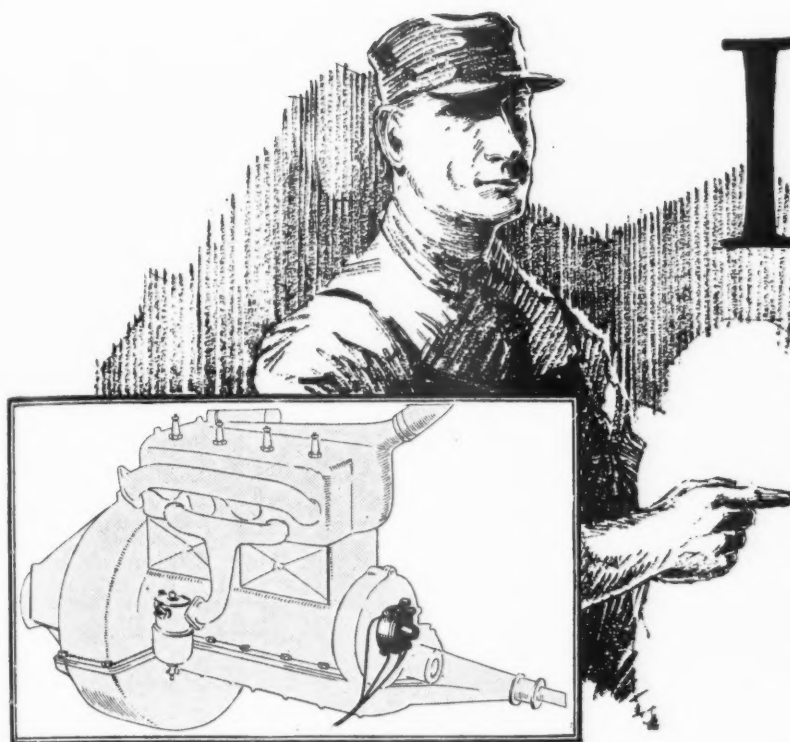
Current Tractor Specifications

MAKE & MODEL	Drawbar-Pulley Rating	Recommended No. of 14 Ins. Plovs	Price	ENGINE		Weight (Lbs.)	Traction Members, Dimensions, Diameter & Face (Ins.)	MAKE & MODEL	Drawbar-Pulley Rating	Recommended No. of 14 Ins. Plovs	Price	ENGINE		Weight (Lbs.)	Traction Members, Dimensions, Diameter & Face (Ins.)	MAKE & MODEL	Drawbar-Pulley Rating	Recommended No. of 14 Ins. Plovs	Price	ENGINE		Weight (Lbs.)	Traction Members, Dimensions, Diameter & Face (Ins.)	
				Make	No. of Cyls. Bore & Stroke							Make	No. of Cyls. Bore & Stroke							Make	No. of Cyls. Bore & Stroke			
Allis-Chalmers...	6-12	1	\$325	LeR.	1-3 1/2 x 4 1/2	2500	48x6	Gray.....EU	22-40	4	2385	Wau.	4-5 x 6 1/2	6900	48x10	Rumely OilPull..E	30-60	8-10	Own.	2-10x12	26000	80x30	80x30	
Allis-Chalmers...	15-25	3	1285	Mid.	1-4 1/2 x 5 1/4	4700	46x12	Hart-Parr.....20	20	2	Own.	2-5 1/2 x 6 1/2	4250	46x10	Russell.....15-30	3-4	Own.	4-5 x 6 1/2	6000	56x14	56x14			
Allis-Chalmers...	20-35	4	1885	Own.	1-4 1/2 x 5 1/4	6150	50x12	Hart-Parr.....30	30	3	Own.	2-6 1/2 x 7	5220	52x10	Russell.....20-40	4-5	Own.	4-5 1/2 x 7	7900	60x16	60x16			
Allwork.....D	20-38	4-5	1695	Own.	1-5 x 7	6500	48x14	Hart-Parr.....(Road)	30	3	Own.	2-6 1/2 x 7	5220	52x10	Russell.....30-60	8-10	Own.	4-8 x 10	22500	84x22	84x22			
Allwork.....G	14-28	3	1195	Own.	1-4 1/2 x 6	4800	48x12	Hart-Parr.....40	40	4	Own.	4-6 1/2 x 6 1/2	7510	32x18	Shaw-Enochs (Gr.)	30-60	8-10	LeR.	4-3 1/2 x 4 1/2	4400	48x8	48x8		
Allwork.....C	16-30	3	1295	Own.	1-5 x 6	5200	48x12	Heider.....D	9-16	12	Wau.	1-4 1/2 x 5 1/4	4000	54x8	Topp-Stewart...B	30-45	4	Wau.	4-4 1/2 x 6 1/2	7800	42x12	42x12		
Altman-Taylor...	15-30	3-4	1900	Cl.	1-5 x 6 1/2	7800	70x12	Heider.....C	12-20	3	Wau.	1-4 1/2 x 5 1/4	4000	57x10	Toro.....6-10	2	\$675	LeR.	4-3 1/2 x 4 1/2	2900	41x9	41x9		
Altman-Taylor...	22-45	4-6	3100	Own.	1-5 1/2 x 8	12500	70x20	Heider.....M-2	5-10	1	LeR.	4-3 1/2 x 4 1/2	2800	46x6	Townsend.....10-20	2-3	800	Own.	2-6 1/2 x 7	4500	48x12	48x12		
Altman-Taylor...	30-60	8-10	1400	Own.	1-7 x 9	22500	90x24	Huber.....(Light 4)	12-25	3	985	Wau.	4-4 1/2 x 5 1/4	5000	60x10	Townsend.....15-30	3-4	1350	Own.	2-7 x 8	6500	56x18	56x18	
Avery.....15	15-	3-4	Own.	1-4 1/2 x 6	4750	50x12	Huber.....(Super 4)	15-30	3	985	Wau.	4-4 1/2 x 5 1/4	5000	60x10	Townsend.....25-50	4-8	2250	Own.	2-8 1/2 x 10	11500	60x24	60x24		
Avery.....20-35	20-35	4-5	Own.	1-4 1/2 x 7	7500	60x16	Lauson.....S	12-25	3	Mid.	4-4 1/2 x 5 1/4	4200	48x12	Traylor.....6-12	1	500	LeR.	4-3 1/2 x 4 1/2	1750	38x10	38x10			
Avery.....25-50	25-50	5-6	Own.	1-6 1/2 x 7	12500	69x20	Lauson.....T	15-30	4	Mid.	4-4 1/2 x 5 1/4	4200	48x12	Twin City.....12-20	2	1200	Own.	4-4 1/2 x 6	4700	50x12	50x12			
Avery.....45-65	15-65	8-10	Own.	1-7 1/2 x 8	22000	87x24	Leader.....B	12-18	2	375	Own.	2-6 1/2 x 6	4800	50x12	Twin City.....20-35	5	2750	Own.	4-5 1/2 x 6 1/2	8400	60x20	60x20		
Avery, Tr. Runner	3	Own.	1-4 x 5 1/2	5000	x 8	Leader.....N	16-32	3-4	1275	Ch.	4-5 x 6	5800	52x12	Twin City.....40-65	8	4750	Own.	4-7 1/2 x 9	23700	84x24	84x24			
Avery, RoadRazer	3	Own.	6-3 x 4	4600	42x 6	Lincoln.....A	15-30	3	1600	Bnd.	4-4 1/2 x 6	5000	40x14	Uncle Sam...C-20	2-3	Her.	4-4 x 5	3000	46x12	46x12				
Bates (St. Mule) H	15-25	3	Mid.	1-4 1/2 x 5 1/2	3600	48x10	Little Giant...B	16-22	4	Own.	4-4 1/2 x 5	5200	54x14	Uncle Sam...B-19	20-30	3-4	Bea.	4-4 1/2 x 6	4650	50x12	50x12			
Bates (St. Mule) F	18-25	3	Mid.	1-4 1/2 x 5 1/2	4850	*56x10	Little Giant...A	26-35	6	Own.	4-5 1/2 x 6	8700	66x20	Uncle Sam...OK	15-27	3	Own.	4-4 1/2 x 5 1/2	3660	48x12	48x12			
Bates (St. Mule) G	25-35	4	Mid.	1-4 1/2 x 6	6500	56x10	Lombard.....100	12-16	3	Own.	6-5 1/2 x 7	19000	x12	Waterloo Boy...N	12-25	3	Own.	2-6 1/2 x 7	5869	52x12	52x12			
Bates (St. Mule) 40	30-40	4	Mid.	1-4 1/2 x 6	8500	*84x12	London.....12-25	3	Mid.	4-4 1/2 x 5 1/2	48x12	Wisconsin...16-30	3-4	1750	Ch.	4-5 x 6 1/2	5600	52x12	52x12					
Bear.....B	25-35	4	1250	Ste.	1-4 1/2 x 6 1/2	6000	*61x12	McCork-Deering	10-20	2	850	Own.	4-4 1/2 x 5	3700	42x12	Wisconsin...22-40	4-5	2550	Ch.	4-5 1/2 x 7	7500	52x12	52x12	
Best.....30	20-30	4	Own.	1-4 1/2 x 6	8100	*68x11	Minneapolis...	15-30	3	1250	Own.	4-4 1/2 x 6	5750	50x12	Yuba (Ball Tread)	15-25	4	2750	Wis.	4-4 1/2 x 6	5750	*36x12	*36x12	
Best.....60	10-60	9	Own.	1-6 1/2 x 8	18500	*89x20	Minneapolis...	17-30	3-4	Own.	4-4 1/2 x 7	6100	54x12	Yuba (Ball Tread)	25-40	8	4500	Own.	4-5 1/2 x 7	10130	*48x17	*48x17		
Bryan.....Steam	15-30	3	2385	Own.	2-4 x 5 1/2	5500	52x12	Minneapolis...	22-41	4-5	Own.	4-6 x 7	12110	62x20	Aro.....F	3-6	1	\$385	Own.	1-4 1/2 x 5	1000	30x4	30x4	
Cash.....12-20	12-20	3	835	Own.	1-4 1/2 x 5	4230	42x12	Minneapolis...	35-70	8-10	Own.	4-7 1/2 x 9	22500	85x30	Beeman...Jr.	1 1/2-4	1	195	B&S	1-2 1/2 x 2 1/2	210	30x3	30x3	
Cash.....15-27	15-27	3-4	1345	Own.	1-4 1/2 x 6	6600	52x14	Monarch.....E	25-40	4	5800	Bea.	4-4 1/2 x 6	12000	*67x12	Beeman...K	1 1/2-4	1	265	Own.	1-3 1/2 x 4 1/2	550	25x 3/4	25x 3/4
Cash.....22-40	22-40	4-5	2650	Own.	1-5 1/2 x 6 1/2	10700	56x16	Monarch.....F	35-60	4	6000	Bea.	6-4 1/2 x 6	15000	*89x12	Bolens.....1923	2 1/2-5	1	180	B&S	1-2 1/2 x 2	200	16x3	16x3
Cash.....40-72	10-72	8-10	1900	Own.	1-7 x 8	21200	72x20	Monarch.....G	40-75	1	Own.	4-7 x 8	24000	96x24	Centaur...1923	2 1/2-5	1	345	N-W	1-4 1/2 x 4 1/2	800	28x4	28x4	
Caterpillar, 2 Ton	15-	3	Own.	1-4 x 5 1/2	4000	*	Moline (Un.)...D	9-18	2-3	725	Own.	4-3 1/2 x 5	3380	52x8	Do-It-All (Jack)	2 1/2-5	1	395	Own.	1-3 1/2 x 3 1/2	750	20x4	20x4	
Caterpillar, 5 Ton	25-	4	Own.	1-4 1/2 x 6	9400	*	Moline (Orcl.)...D	9-18	2-3	725	Own.	4-3 1/2 x 5	3340	44x8	Do-It-All (Baby)	2 1/2-5	1	495	Own.	1-4 1/2 x 5	1200	26x 2 1/2	26x 2 1/2	
Caterpillar, 10 Ton	40-	6	Own.	1-6 1/2 x 7	20000	*	Monarch.....C	20-30	4	3800	Bea.	4-4 1/2 x 6	8700	*66x12	Do-It-All (Twin 12)	4-15	1	495	Own.	2-3 1/2 x 3 1/2	800	32x4	32x4	
Cletrac.....F	9-16	2	815	Own.	1-3 1/2 x 4 1/2	1930	*42x5 1/2	Monarch.....D	35-60	4	6000	Bea.	6-4 1/2 x 6	15000	*89x12	Kinkade.....11-13	1	190	Own.	1-3 x 3	180	22x 5 1/2	22x 5 1/2	
Cletrac.....W	12-22	2	1345	Own.	1-4 x 5 1/2	3455	*48x8	Nichols-Shepherd	20-42	4-6	2600	Own.	2-8 x 10	13500	64x20	M.B.M. Red	E	1-1 1/2	250	Own.	1-3 1/2 x 4	410	20x3	20x3
Eagle.....F	12-22	3	Own.	2-7 x 8	5850	48x12	Nichols-Shepherd	25-50	6-8	3320	Own.	2-9 x 12	20500	69x28	Motor Maculivator	2	6	148	Own.	1-2 1/2 x 3 1/2	210	19x3 1/2	19x3 1/2	
Eagle.....H	16-30	4	Own.	2-8 x 8	7100	48x12	Nichols-Shepherd	35-70	8-12	10300	Own.	2-10x14	30000	73x32	N.B.....501A	2 1/2-4	1	295	Own.	1-3 1/2 x 4 1/2	750	24 1/2 x 4 1/2	24 1/2 x 4 1/2	
E-B.....AA	12-20	3	Own.	1-4 1/2 x 5	4550	54x12	Pioneer.....G	18-36	4	Own.	4-5 1/2 x 6	6500	60x18	Utilitor.....501A	2 1/2-4	1	340	Own.	1-3 1/2 x 4 1/2	925	24 1/2 x 4 1/2	24 1/2 x 4 1/2		
E-B.....Q	12-20	3	Own.	1-4 1/2 x 5	6500	60x12	Pioneer.....C	40-75	1	Own.	4-7 x 8	24000	96x24	Utilitor.....501A	2 1/2-4	1	340	Own.	1-3 1/2 x 4 1/2	925	24 1/2 x 4 1/2	24 1/2 x 4 1/2		
E-B.....16-32	16-32	4	Own.	1-5 1/2 x 7	9400	72x16	Pioneer.....C	10-20	2	850	Own.	4-4 1/2 x 5	3700	42x12	Utilitor.....501A	2 1/2-4	1	340	Own.	1-3 1/2 x 4 1/2	925	24 1/2 x 4 1/2	24 1/2 x 4 1/2	
Fagool.....10-12	12	1200	Lye.	1-3 1/2 x 5	3600	48x 8 1/2	Rumely OilPull.H	12-20	3	Own.	2-6 x 8	6638	51x12	Utilitor.....501A	2 1/2-4	1	340	Own.	1-3 1/2 x 4 1/2	925	24 1/2 x 4 1/2	24 1/2 x 4 1/2		
Fordson.....-18	12	420	Own.	1-4 x 5	2562	42x12	Rumely OilPull.H	16-30	4	Own.	2-7 x 8 1/2	9506	50x16	Utilitor.....501A	2 1/2-4	1	340	Own.	1-3 1/2 x 4 1/2	925	24 1/2 x 4 1/2	24 1/2 x 4 1/2		
Frick.....A	12-20	2	1000	Ord.	1-4 x 6	5800	60x10	Rumely OilPull.G	20-40	6	Own.	2-8 x 10	12968	64x20	Utilitor.....501A	2 1/2-4	1	340	Own.	1-3 1/2 x 4 1/2	925	24 1/2 x 4 1/2	24 1/2 x 4 1/2	
Frick.....C	15-28	3	1600	Bea.	4-4 1/2 x 6	6730	60x12																	

Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

PRICES							Wheel Base (Ins.)	Tire Size (Ins.)	NAME AND MODEL	ENGINE			ELECTRICAL SYSTEM		Clutch, Type and Make	Gearset: Make	Universal: Type and Make	REAR AXLE		BRAKES, Service and Emergency			
OPEN MODELS			CLOSED MODELS							Make and Model	No. of Cyls. Bore and Stroke	Horse Power Rating (N.A.A.C.)	Carburetor Make	Generator and Starter Make				Ignition Make	Type and Make		Ratio		
2-3 Pass.	4-5 Pass.	6-7 Pass.	Sport Models	2-3 Pass.	4-5 Pass.	5-7 Pass.																	
\$1950	\$1695	\$1760	\$1850d	d2195f	\$2350	\$2550d	127	33x4 1/2	American.....D-66	H-S.....91	6-3 1/2x5	29.40	Strom...	G-D....	A-K....	s-p	B&B.	War....	m Hart.	F Salis	5.10	R-R	
	1195		1445c	1425	1495	d1895p	115	32x4*	Anderson.....41	Cont...7 U	6-3 1/2x4 1/4	23.44	Zenith..	West...	West...	s-p	B&B.	Durston.	f Good.	1/2 F Salis	5.75	R-R	
		1595			1695		122	32x4*	Anderson.....50	Cont...8 R	6-3 3/4x4 1/2	27.34	Zenith..	Remy...	Remy...	s-p	B&B.	Durston.	f Good.	3/4 F Salis	4.50	R-R	
	1395		1660d		1995		120	32x4*	Apperson.....6	Falls T8000	6-3 1/2x4 1/4	23.44	Strom...	Remy...	Remy...	s-p	Rock.	Mech....	m Thie..	1/2 F Col.	5.10	R-R	
	2485	2485			3385	3385	130	33x5	Apperson.....8-23-S	Own.....	8-3 1/4x5	33.80	Johnson.	Bijur...	Remy...	m-d	Own.	Own....	m Thie..	1/2 F Own	4.25	R-R	
	1095	d1295p	1365d	1695d	1595	1845d	114	31x4*	Auburn.....6-43	Cont...7 U	6-3 1/2x4 1/4	23.44	Strom...	Remy...	Remy...	s-p	B&B.	Warner.	m Univ.	1/2 F Col.	4.63	R-R	
	1695		1935d		2245f	2445	122	32x4 1/2	Auburn.....6-63	Own.....	6-3 1/4x5	25.35	Strom...	Remy...	Remy...	s-p	B&B.	Warner.	m Thie..	1/2 F Col.	4.65	R-T	
							124																
	1395		1495d	1685d	1850		118	32x4	Barley.....6-50	H-S.....40	6-3 1/4x5	25.35	Strom...	Delco..	Delco..	s-p	B&B.	Fuller...	f M&E.	3/4 F Col.	5.10	R-R	
	935	965		800g	1395c	1495	109	31x4	Buick.....1924	Own.....	4-3 3/4x4 1/2	18.23	Marvel.	Delco..	Delco..	m-d	Own.	Own....	m Own.	1/2 F Own	4.66	R-R	
	1275	1295		1135g	1995c	1695	120	32x4	Buick.....1924	Own.....	6-3 3/4x4 1/4	27.34	Marvel.	Delco..	Delco..	m-d	Own.	Own....	m Own.	1/2 F Own	4.10	R-R	
	1385g		1565	1675a	1945c	2235f	128	32x4 1/2	Buick.....1924	Own.....	6-3 3/4x4 1/4	27.34	Marvel.	Delco..	Delco..	m-d	Own.	Own....	m Own.	F Own	4.70	R-R	
				1725d		2385d	2795f																
3085	3085	3085		3875	3950	3585	132	33x5	Cadillac.....V 63	Own.....	8-3 1/2x5 1/2	31.25	Own.	Delco..	Delco..	m-d	Own.	Own....	m Spicer	F Tim	4.50	R-R	
				3275	4150	4600f																	
1750	1790		2230d	2480c	2575		122	32x4 1/2	Case.....X	Cont...8 R	6-3 3/4x4 1/4	27.34	Schebler.	Delco..	Delco..	m-d	Own.	Own....	f Sneed	1/2 F Col.	4.90	R-R	
		2475				3325	132	33x5	Case.....Y	Cont...6 T	6-3 3/4x5 1/4	31.54	Rayfield.	Delco..	Delco..	m-d	Own.	Own....	f Sneed	1/2 F Col.	4.70	R-R	
	1185		1335d		1535		117	32x4	Chalmers.....V	Own.....	6-3 1/2x4 1/2	25.35	Strom.	A-L....	A-L....	s-p	Mech.	Warner.	m Mech.	1/2 F Tim	5.13	R-R	
	1295					2095	122	33x4 1/2	Chalmers.....V	Own.....	6-3 1/2x4 1/2	25.35	Strom.	A-L....	A-L....	s-p	Mech.	Warner.	m Mech.	1/2 F Tim	5.13	R-R	
1595	1485	1635	1785c	1895d	1745	2385	123	32x4*	Chandler.....Six	Own.....	6-3 1/2x5	29.40	Strom...	Bosch.	Bosch.	s-p	B&B.	Own....	f Own.	F Own	4.45	R-T	
	1685			2095f	d2270	2995f																	
490	495	395g		640	795	725c	103	30x3 1/2	Chevrolet.....Superior	Own.....	4-3 1/2x4	21.76	Zenith..	Remy...	Remy...	e	Own.	Own....	m Own.	1/2 F Own	3.77	R-R	
1525	1335	1395d		d1705f	1625	1895d		29x4 1/2	Cnryslr.....Six	Own.....	6-3 x4 1/2	21.60	Ball&B.	Remy...	Remy...	m-d	Own.	Own....	m Detr.	1/2 F Own	4.60	R-T	
1085	1045		1145d	1245	1295	1495d	112 1/2	31x4*	Cleveland.....42	Own.....	6-3 1/2x4 1/2	22.50	Strom.	Bosch.	Bosch.	s-p	B&B.	Own....	m Mech.	1/2 F Own	4.90	R-T	
				1295d	1315	1395																	
2175	2175	2175	2475	2750c	3075	d3075f	127 1/2	33x5*	Cole.....Master	Nort...311	8-3 1/2x4 1/2	39.20	Johnson.	Delco..	Delco..	m-d	Nort.	Nort....	m Spicer	F Col.	4.70	R-R	
	1475					1995		115	32x4*	Columbia.....Big Six	Cont...8 R	6-3 3/4x4 1/2	27.34	Strom.	A-L....	A-L....	s-p	B&B.	Durston.	m Spicer	1/2 F Tim	4.75	R-R
	995	995		1195d	1395	1495	1650d	115	31x4*	Columbia.....Light Six	Cont...7 U	6-3 1/2x4 1/4	23.44	Strom.	A-L....	A-L....	s-p	B&B.	Durston.	m Spicer	1/2 F Tim	4.80	R-T
1395p	1295		1595c	1495	2195p	1895f	116	32x4	Courier.....	Falls. 8000	6-3 1/2x4 1/4	23.44	Strom...	West...	A-K....	s-p	B&B.	Muncie..	f Flex.	3/4 F Col.	5.10	R-R	
		3100	3100			4500	138	33x4 1/2	Crawford.....23-6-70	Cont...6 T	6-3 3/4x5 1/4	31.54	Zenith..	West...	Bosch.	m-d	B-L.	B-L....	m Spicer	1/2 F Tim		R-R	
		5800	6300		3500c	4500	138	33x5	Crawf d-Dagmar. 6-70	Cont...6 T	6-3 3/4x5 1/4	31.54	Zenith..	West...	Bosch.	m-d	B-L.	B-L....	m Spicer	1/2 F Tim		R-R	
					7650		132	33x5	Cunningham.....V4	Own.....	8-3 1/2x5	45.00	Strom.	Delco..	Delco..	m-d	Own.	Own....	f Sneed	F Tim	4.23	R-R	
							142																
1295	1495		1495c		1595	1795c	115	31x4*	Davis.....71	Cont...7 U	6-3 1/2x4 1/4	23.44	Strom.	A-L....	A-L....	s-p	B&B.	Warner.	m Peters	1/2 F Tim	5.10	R-R	
	805	895		1055d	1035	1250	1545d	116	31x4*	Davis.....81	Cont...8 R	6-3 3/4x4 1/2	27.34	Strom.	A-L....	A-L....	s-p	B&B.	Warner.	m Peters	1/2 F Tim		R-R
				1025h	1385	1335c	1545d	116	32x4*	Dodge Brothers.	Own.....	4-3 3/4x4 1/2	24.03	Stewart.	N.E....	N.E....	m-d	Own.	Own....	m Own.	1/2 F Own	4.51	R-R
		3950	3950	4150c	4985c	5550	5900	136	32x6	Dorris.....6-80	Own.....	6-4 x5	38.40	Strom.	West...	Bosch.	m-d	Own.	B-L....	m Spicer	1/2 F Tim	3.77	R-R
		1095		1535d	1595	d1535f	115	31x4*	Dort.....27	Falls T8000	6-3 1/2x4 1/4	23.44	Carter.	Bosch.	Bosch.	m-d	Detl.	Own....	m Ther.	3/4 F Fln	4.66	R-R	
6500	6250	6750	6500c	d7800f	7500	7800	131	33x5	Duesenberg Straight-8	Own.....	8-2 1/2x5	26.45	Strom.	Delco..	Delco..	s-p	Own.	Own....	f Cli.	1/2 F Own	4.90	F-T	
1990	1990		2850	2850			124	32x4 1/2	Dupont.....C	H-S.....90	6-3 1/2x5	29.40	Strom.	West...	West...	m-d	B-L.	B-L....	m Spicer	1/2 F Col.		R-R	
890	890		1065d	1365	1365		109	31x4	Durant.....A-22	Cont. Spec.	4-3 3/4x4 1/4	24.03	Tillotson	A-L....	A-L....	s-p	Own.	Warner.	m Spicer	3/4 F Ad.	4.33	R-R	
				1465																			
		820					115	30x3 1/2	Eagle.....6	Cont. Spec.	6-3 1/2x4 1/4	23.44	Tillotson	A-L....	A-L....	s-p	B&B.	Warner.	m Spicer	1/2 F Ad.	4.77	R-R	
		995		1195d	1250f	1265f	p1625d	112	31x4*	Elcar.....4-40	Lyc...CF	4-3 3/4x5	21.03	Zenith..	Delco..	Delco..	s-p	B&B.	Warner.	m Mech.	1/2 F Salis	4.70	R-R
		1220		1420	p1850d	1650	1490f	113	31x4*	Elcar.....6-50	Cont...7 U	6-3 1/2x4 1/4	23.44	Strom.	A-L....	A-L....	s-p	B&B.	Warner.	m Mech.	1/2 F Salis	4.70	R-T
		1395		1595d	11995d	1995	p2195d	118	32x4*	Elcar.....6-60	Cont...8 R	6-3 1/2x4 1/2	27.34	Strom.	Delco..	Delco..	s-p	B&B.	Warner.	m Hart.	1/2 F Salis	4.70	R-R
		1895		2145	2345	d3000f	118	32x4 1/2	Elgin.....25	Falls T8000	6-3 1/2x4 1/4	23.44	Strom.	DeJon.	DeJon.	s-p	B&B.	Warner.	f Sneed	1/2 F Col.	4.66	F-T	
		850			975		110 1/2	31x3 3/4	Essex.....6	Own.....	6-2 1/2x4	16.54	Stewart.	Bosch.	Bosch.	s-p	Own.	Own....	m Spicer	1/2 F Own	5.40	R-R	
1395	1395		1630b	2095c	2185		120	32x4 1/2	Flint.....	Cont. Spec.	6-3 3/4x5	27.34	Strom.	DeJon.	DeJon.	s-p	Own.	Warner.	m Spicer	1/2 F Ad.		R-R	
265r	295s	230g		525	685	590d	100	30x3 1/2	Ford.....T	Own.....	4-3 3/4x4	22.50	Own.	Own.	m-d	Own.	Own....	m Own.	3/4 F Own	3.63	T-R		
	1950		2750c	2250	\$2950d	115	32x4 1/2	Franklin.....10-B	Own.....	6-3 1/4x4	25.35	Own.	A.K....	A-K....	s-p	M&E.	Own....	m Spicer	F Own	4.73	T-R		
			2850f	2850																			
895	895	995d	1095	1145	1445	\$1335d	112	32x4	Gardner.....Series 5	Lyc. Spec.	4-3 1/2x5	21.76	Zenith..	West...	West...	s-p	B&B.	Mech....	m Peters	3/4 F Fln	4.80	R-T	
		520					100	30x3 1/2	Gray.....	Own.....	4-3 3/4x4	21.03	Scoc...	West...	West...								



If
I were selling a
timer for Fords
and wanted to give
Ford owners a run
for their money

I'd sell them a timer that needed no oil; that was grit, grease and water-proof; that the owner could forget for ten thousand miles or more.

I'd sell them a timer that would wipe millions of perfect contacts, whether the cam-shaft wobbled or not.

I'd sell them one so good that I could guarantee to replace it if the owner simply said the old one failed.

A stream of water doesn't short the LIFE TIMER. It is fool-proof and needs no oil. Perfect Bronze on brass contact is wiped by rotor that functions whether the cam-shaft is true or not. The commutator is reversible—giving two timers for the price of one.

We Guarantee Every "Life Timer", Unconditionally

If you are not selling them, write for descriptive literature and discounts. Get your share of this business.

Retail Price \$2.00

LIFE TIMERS are delivered to dealers in handsome display cartons. The retail price east of the Rockies is \$2.00 each. Your discount is generous. If your jobber cannot supply you, send the coupon below direct to us.

More Jobbers Wanted

Plant facilities enable us to guarantee delivery to an additional number of jobbers. Interested jobbers are invited to send the coupon below to obtain list of discounts, literature and sample.

Get Your Share of This Business
Our Guarantee Protects You
Send the Coupon Today

Mechanical Production Company

Milwaukee, Wis., U. S. A.

Life Timer
for Fords

Guaranteed by the maker
Unconditionally



**Mechanical Production Co.,
Milwaukee, Wis.**

I am a dealer. Send literature and discounts with name of nearest jobber where I can get Life Timers. ☐
We are jobbers. Send literature, discounts and sample. ☐

Name State.....
Address
City

Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

PRICES						Wheel Base (Ins.)	Tire Size (Ins.)	NAME AND MODEL	ENGINE			ELECTRICAL SYSTEM		Clutch: Type and Make	Gearset: Make	Universal: Type and Make	REAR AXLE		BRAKES, Service and Emergency		
OPEN MODELS			CLOSED MODELS						Make and Model	No. of Cyls. Bore and Stroke	Horse Power Rating (N.A.A.C.)	Carburetor Make	Generator and Starter Make				Ignition Make	Type and Make		Gear Ratio	
2-3 Pass.	4-5 Pass.	6-7 Pass.	Sport Models	2-3 Pass.	4-5 Pass.	6-7 Pass.															
\$3250	\$3250	\$3250		\$4300c	\$4400	\$4700	132	33x5*	LaFayette	Own.	8-3 1/2 x 5 1/4	33.80	Johnson	Delco	Delco	m-d Own.	Own.	m Own.	F Std	4.58	R-R
1895	1395	1995	2145d	2395†	1815	119	32x4*	Lexington	Ansted-M.	6-3 3/8 x 4 1/2	26.30	Rayfield	G-D.	Conn.	s-p Long.	Warner.	f Snead	1/2 F Sals	5.10	R-T	
	1895	1995		2395†	2295	123	32x4 1/2*	Lexington, Minute Man	Anst. . . M	6-3 3/8 x 5 1/4	26.30	Rayfield	G-D.	Conn.	s-p Long.	Warner.	f Snead	1/2 F Sals	5.10	R-T	
	1575	2295			2695			Liberty	Own.	6-3 1/2 x 5	23.44	Strom.	Wagner	Wagner	s-p B&B.	Detroit.	m Spicer	1/2 F Tim	4.80	R-T	
3800	3800c	3800		4600c	4400	4900	136	33x5*	Lincoln	Own.	8-3 3/8 x 5	36.45	Strom.	Delco	Delco	m-d Own.	Own.	m Spicer	F Tim	1.58	R-R
8600	7900	7900		5200	4700	5100†	142	35x5	Locomobile	Own.	6-4 1/2 x 5 1/2	48.60	Vall&B.	West.	Delco	m-d Own.	Own.	m Own.	F Own	3.50	R-R
2300g	2785	2785	2985a	3585	4285	4200	136	32x4 1/2*	Marmon	Own.	6-3 3/4 x 5 1/8	33.75	Strom.	Delco	Delco	m-d Own.	Own.	m Spicer	3/4 F Own	4.10	R-R
795	795		2965c	3985	3985	3985	109	31x4	Maxwell	Own.	4-3 3/8 x 4 1/2	21.03	Stewart.	Remy.	Remy.	s-p Mech.	Own.	f Own.	1/2 F Own	1.60	R-T
			895b	1195	1585d																
			975d	1295	1045d																
2500	2500		3000	3000		127	32x4 1/2*	McFarlan	Wisc. . . Y	6-3 3/8 x 5	27.31	Rayfield	Delco	Delco	m-d Long.	Warner.		1/2 F Univ	5.10	R-T	
5400	5600	5700	6720	6600c	6810	140	33x5	McFarlan	Own.	6-4 1/2 x 5	48.60	Rayfield	West.	West.	m-d M&E	B-L.	m Peters	1/2 F Tim	3.75	R-R	
				6720	6900																
1295	1295		1495d	1685c	1685	115	31x4*	Moon	Cont. 7 U	6-3 1/2 x 4 1/4	23.44	Strom.	Delco	Delco	s-p B&B.	Warner.	m Spicer	1/2 F Tim	5.10	R-T	
					1895																
	1785	2150		2585	2485	128	32x4 1/2*	Moon	Cont. 8 R	6-3 3/8 x 4 1/2	27.34	Strom.	Delco	Delco	s-p B&B.	B-L.	m Spicer	1/2 F Tim	5.09	R-R	
	995					113	31x4*	Moon	Cont. 7 U	6-3 3/8 x 4 1/4	23.44	Strom.	Delco	Delco	s-p B&B.	Warner.	m Spicer	1/2 F Tim	5.10	R-T	
1240	1240	1050g	1645c	2090c	1640	121	33x4	Nash	Own.	6-3 1/2 x 5	25.35	Marvel.	Delco	Delco	s-p B&B.	Own.	m Own.	1/2 F Own	1.50	R-T	
		1390		2090	1990	127	34x4 1/2*	Nash	Own.	6-3 1/2 x 5	25.35	Marvel.	Delco	Delco	s-p B&B.	Own.	m Own.	1/2 F Own	1.90	R-T	
915	935		1165	1445	1112	112	33x4	Nash	Own.	4-3 3/8 x 5	18.23	Marvel.	Delco	Delco	s-p B&B.	Own.	m Own.	1/2 F Own	5.50	R-T	
2475	2475c	2375	2485d	3250	3285	130	32x4 1/2*	National	Own.	6-3 1/2 x 5 1/4	29.40	Rayfield	West.	Delco	s-p B&B.	B-L.	m Univ.	F Col.	1.08	R-R	
995	995	3150		3725																	
			1095a	1195	1445	113	31x4	Oakland	Own.	6-2 1/2 x 4 3/4	18.90	Strom.	Remy.	Remy.	s-p Hoos.	Muncie.	m Mech.	1/2 F Own	1.70	F-T	
			1095d	1395																	
785	795		915d	1075		110	31x4	Oldsmobile	Own.	6-2 3/4 x 4 3/4	18.15	Zenith.	Delco	Delco	s-p B&B.	Muncie.	f Own.	1/2 F Own	5.10	R-T	
				1135																	
495	495		395g	750	795	695d	100	30x3 1/2*	Overland	Own.	4-3 1/2 x 4	19.60	Tillotson	A-L.	A-L.	s-p B&B.	Own.	m Own.	1/2 F Own	1.50	R-R
695						106	30x3 1/2*	Overland	Own.	4-3 1/2 x 4	19.60	Tillotson	A-L.	A-L.	s-p B&B.	Own.	m Own.	1/2 F Own	1.50	R-R	
2585	2585	2350c	2750c	3275c	3375	3450	126	33x4 1/2*	Packard	Own.	6-3 3/8 x 5	27.34	Own.	A-K.	Delco	m-d Own.	Own.	m Spicer	1/2 F Own	1.60	F-R
	2785	2450g		3625f	3675f	133	33x4 1/2*	Packard	Own.	6-3 3/8 x 5	27.34	Own.	A-K.	Delco	m-d Own.	Own.	m Spicer	1/2 F Own	4.66	F-R	
3850c	3650		4550c	4725	d4700	136	33x5	Packard	Own.	8-3 3/8 x 5	36.45	Own.	Dyneto.	Delco	m-d Own.	Own.	m Spicer	1/2 F Own	4.70	R-R	
	3850			4900f	4950	143	33x5	Packard	Own.	8-3 3/8 x 5	36.45	Own.	Dyneto.	Delco	m-d Own.	Own.	m Spicer	1/2 F Own	4.70	R-R	
	1795	1795	d2395†	2595	2595	131	33x4 1/2*	Paige	Cont. Spec.	6-3 3/8 x 5	33.75	Rayfield	Remy.	A-K.	m-d Long.	Warner.	m Mech.	1/2 F Tim	1.60	R-R	
	1995p			2770p																	
1550	1390	1425	1465d	2395d	2395	120	32x4 1/2*	Peterson	Cont. 8 R.	6-3 3/8 x 4 1/2	27.34	Strom.	Delco	Delco	s-p B&B.	Durston.	m Hart.	1/2 F Sals	4.50	R-R	
1985	1985			2675		126	32x4 1/2*	Peerless	Own.	6-3 1/2 x 5	29.40	Johnson	Delco	Delco	m-d Own.	Own.	m Spicer	1/2 F Tim	4.66	F-R	
	2690	2750	2260g	3300	3340	128	33x5*	Peerless	Own.	8-3 1/4 x 5	33.80	Ball&B.	Delco	Delco	m-d Own.	Own.	m Spicer	3/4 F Tim	4.90	R-R	
5250	5250	5250	6800	6900	6800†	138	33x5	Pierce-Arrow	Own.	6-4 x 5 1/2	38.40	Own.	Delco	Delco	m-d Own.	Own.	m Spicer	1/2 F Own	4.29	R-R	
			7000f	7000																	
	1695	1745	2445	2495†		126	32x4 1/2*	Pilot	H-S. . . 90	6-3 1/2 x 5	29.40	Tillotson	Wagner	Wagner	m-d Hoos.	Muncie.	m Blood.	3/4 F Col.	4.67	R-R	
2535	2585	2585d	2635d	3385	3585	126 3/4	32x4 1/2*	Premier	Own.	6-3 3/8 x 5 1/2	27.34	Strom.	Delco	Delco	s-p B&B.	Own.	m Spicer	1/2 F Tim	4.55	R-R	
	2300	2350	2400c	3000d	3050	124	32x4 1/2*	R & V Knight	Own. Kn't	6-3 1/2 x 4 1/2	29.40	Strom.	A-L.	A-L.	s-p B-L.	B-L.	m Spicer	1/2 F Tim	5.40	R-R	
1335	1545d			1875	d2335†	120	32x4*	Reo	Own.	6-3 3/8 x 5	24.34	Rayfield	N.E.	N.E.	m-d Own.	Own.	m Own.	1/2 F Own	4.70	R-R	
				1985																	
3200c	3200		3200c	4000		131	32x4 1/2*	Revere	Monsen. 4	4-4 3/8 x 6	30.63	Strom.	West.	Bosch	m-d B-L.	B-L.	m Spicer	3/4 F Std	3.44	R-R	
1645	1595		2035	2135		117	32x4*	Rickenbacker	B	6-3 1/2 x 4 1/2	23.44	Strom.	Bosch.	Bosch.	s-p Own.	Own.	m Mech.	3/4 F Own	4.60	F-T	
2685	2485	2685	2750c	3285	3585	118	32x4 1/2*	Roamer	Cont. 12XD	6-3 1/2 x 5 1/4	29.40	Strom.	West.	Split.	s-p B&B.	Fuller.	f M&E	3/4 F Tim	4.60		
				3950f	4000f																
				4250p	3950	138	32x4 1/2*	Roamer	Cont. 12XD	6-3 1/2 x 5 1/4	29.40	Strom.	West.	Split.	s-p B&B.	Fuller.	f M&E	3/4 F Tim	4.60	R-R	
3685	3485	3800	3650c	4650p		128	32x4 1/2*	Roamer	Due. . . G1	4-4 1/2 x 6	28.90	Strom.	West.	Bosch.	m-d B-L.	B-L.	f M&E	3/4 F Tim	4.63	R-R	
3785																					
	895		975	1175	1275	112	31x5 1/4*	Rollin	Own.	4-3 1/2 x 4 1/2	16.90	Tillotson	Dyneto	Conn.	s-p B&B.	Muncie.	f Snead	1/2 F Sals	5.10	F-F	
11400	10900	11450		13500	12900	143 1/2	33x5	Rolls-Royce	Own.	6-4 1/2 x 4 3/4	48.60	Own.	Special.	Bosch.	c Own.	Own.	m Own.	F Own	3.72	R-R	
1645	1645		2645d	2645		136	33x5	Sayers Six	Cont. . . 6J	6-3 3/8 x 5	33.75	Strom.	Delco	Delco	s-p B&B.	B-L.	m Cle.	F Tim	4.91	R-R	
985	985					112	31x4	Seneca	Lye. . . CF	4-3 3/8 x 5	21.03	Zenith.	A-L.	A-L.	s-p B&B.	Own.	m Univ.	F Pen.	4.50	R-R	
2750	2750	2750	2425g	3585	3985	130	32x4 1/2*	Stanley	Own.	2-4 x 5	13.00	None.	Bijur.	None.	None.	None.	None.	1/2 F Own	4.50	R-R	
490	490		640d	785	p935d	102	30x3 1/2*	Star	Cont. Spec.	4-3 1/2 x 4 1/2	15.63	Tillotson	A-L.	A-L.	s-p Own.	Warner.	m Spicer	3/4 F Ad.	4.87	R-R	
1750c	1750	1445g	c1995p	2350	d2195†	119	33x4 1/2*	Stearns-Knight	Own. Kn't	4-3 3/8 x 5 1/8	22.50	Schebler	A-L.	A-K.	m-d Own.	Own.	f Cli.	1/2 F Own	4.54	R-R	
2395	2395	2495	2195g	3395	3395	130	33x5	Stearns-Knight	Own. Kn't	6-3 1/2 x 5	25.35	Schebler	A-L.	A-K.	m-d Own.	Own.	f Cli.	1/2 F Own	4.70	R-R	
			3150p	3200†																	
1295	1295		1595d	1995		117	32x4														



Due to its
Extraordinary Dependability
the V-63 CADILLAC
requires very little
guarantee service



CADILLAC

STANDARD OF THE WORLD

V63

"Hey, Bring Over Those Quick-Sets"

shouted Jim Bradley to his buddy, Bill Smithers. "Now that the boss has given us a set of real reamers, for the love of Mike, let's use 'em! Ye know, I had a set of Quick-Sets over there at the Main Street Garage, and I want to tell the world they put some pep into that shop."

Jim is a Quick-Set booster. To him, they mean reliability, accuracy, speed. Before he used them, his shop had a miscellaneous assortment of joblot reamers spread all over the place. Usually the exact size he had to have for a certain job was not in the list. This resulted in delays, annoyances with customers, and trouble for Jim.

But, when Old Man Jones bought him that No. 44 Quick-Set outfit, all his troubles vanished. Eleven reamers gave him a cutting range from 15/32" to

1 1/2"—more than enough to handle any job that shop ever got. Packed in a handsome wooden box, with separate compartments for each reamer, they were never lost or mislaid.

Another thing Jim knew was that the cutting blades of every Quick-Set Reamer are quickly and easily interchangeable. He doesn't have to send a Quick-Set back to the factory for adjustment, because he has learned that the makers of Quick-Set Reamers have spent thousands of dollars to guarantee him absolutely accurate blades which he, himself, can change in a few minutes' time.

Is there any wonder Jim Bradley—and thousands of other first-class mechanics all over this country—are enthusiastic about Quick-Set Reamers and demand them for their shops whenever they can?

Ask your dealer for Quick-Set. He will gladly show you what they will do. Be careful to see that you get the genuine blue-black Quick-Set, stamped with the diamond "C" trademark.

The



**TWIST DRILL
COMPANY
CLEVELAND**
NEW YORK-CHICAGO-LONDON

TRADE MARK REG. U.S. PAT. OFF.

Quick-Set
Adjustable Reamer

TRADE MARK REG. U.S. PAT. OFF.



TRADE MARK
REG. U.S. PAT. OFF.



Yes!

the Car that
Outperforms
Anything in
its Class

A Bigger Profit for dealers who sell it!

The Gardner dealer has a double advantage—and a double money-making opportunity:

First—

He has the car that outperforms anything in its class.

A good-looking, easy-handling, well-built job that leaps ahead from 5 to 25 miles in 7.7 seconds when the bluecoat whistles "Go!"

That crawls through traffic at a bare two miles an hour in high gear!

That glides along from 2 to 60 miles an hour in high—with no perceptible vibration at any driving speed.

That will climb any hill in high that any other car will make—*regardless of size or price.*

More than 1,200 dealers are making money—*real money*—with the Gardner car. Some valuable territory is now open for "go-getters" who know a winner when they see it.

Write or wire for full details of the Gardner franchise and its possibilities in your territory.

THE GARDNER MOTOR CO., INC.

Second—

He has a complete line of open and enclosed models on a single chassis, a price range within easy reach of 94% of all automobile prospects, and a bigger discount, which means added profit.

Behind him is the friendly co-operation of a financially sound organization with more than forty years of manufacturing experience.

His contract is a fair, safe, simple one, written in plain English on one page, and supported by policies which, for liberality and soundness, are unsurpassed.

ST. LOUIS, U. S. A.

GARDNER

LUPTON AUTO-PARTS STORAGE



Disorder and a contracted outlook usually go together



Business prosperity
and growth come with

LAPS

If you are ready to get rid of disorder and delay, we can demonstrate to you how an orderly system of caring for parts and displaying accessories will simplify and expand your business rapidly.

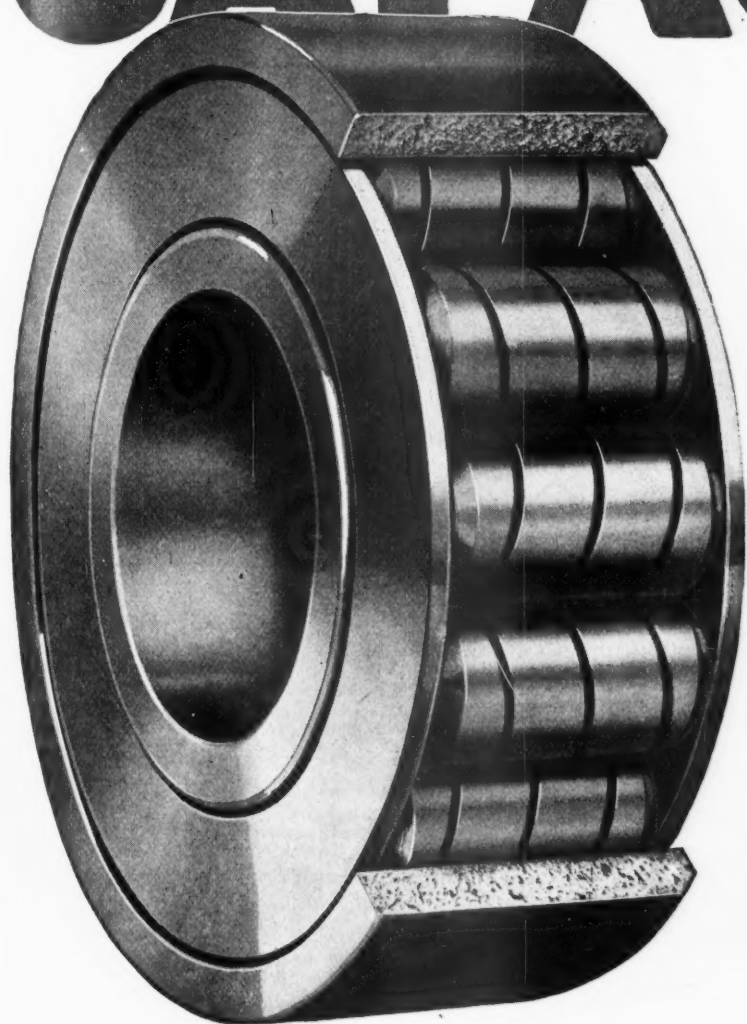
Your Lupton jobber can tell you more.

DAVID LUPTON'S SONS COMPANY

Main Office and Works, PHILADELPHIA

SALES OFFICE, 919 Majestic Bldg., DETROIT

CAPACITY



THE improved motor car of today calls for improved bearings. To meet present day driving conditions bearings must have ample capacity for—

carrying heavy loads continuously,
operating at high speeds,
absorbing shocks on rough roads,
sustaining overloads to which many cars are so frequently subjected.

Hyatt New Series Bearings have large carrying capacity designed into them to meet these very conditions. The greatest possible number of rollers in a given diameter secures the greatest possible bearing capacity. Hyatt New Series Bearings, therefore, assure maximum load carrying capacity for those cars that are equipped with them.

Hyatt Roller Bearing Company

Newark	Detroit	Chicago	San Francisco
Worcester	Milwaukee	Huntington, W. Va.	Minneapolis
Philadelphia	Cleveland	Pittsburgh	Buffalo
	Indianapolis		

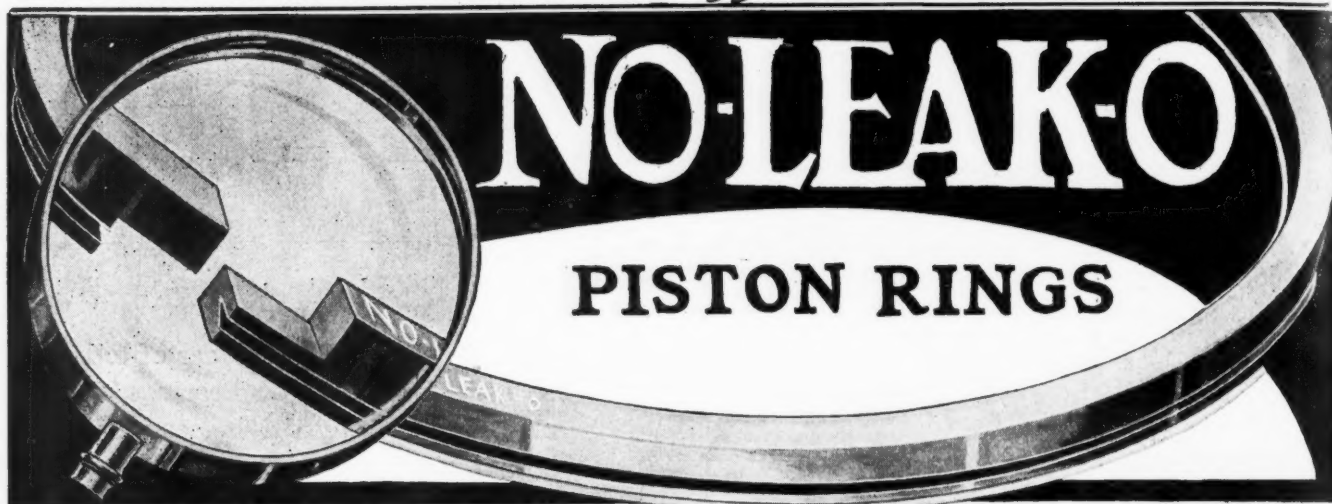
*The
New Series*

HYATT

Quiet

Roller Bearings

An Automobile Mechanic Suggested this Advertisement



*A Piston Ring that appeals
to your Common Sense*

"Common sense shows that there is less chance of oil working its way up around the angles of a step cut piston ring like No-Leak-O's. I have seen several attempts to imitate No-Leak-O Piston Rings but have yet to hear of a successful one." (Name upon request.)

Read the Reasons

1. Individually cast in one piece.
2. Made of finest close-grained tough grey iron.
3. Turned finish for quick seating.
4. Equalized pressure on cylinder walls.
5. The perfect oil seal means perfect combustion.
6. The original patented non-clogging oil-SEALing groove insures perfect lubrication, prevents leakage due to worn or warped cylinder walls. Not a mere oil scraper.
7. The perfect fit plus the constant oil seal made possible by the angled groove makes it gas and oil tight under all conditions.
8. No-Leak-O service is unexcelled. Prices 35c and up.
9. By reversing the top No-Leak-O ring, with the groove toward the firing chamber, kerosene and unburnt gasoline is kept out of the crank case.
10. Standard replacement ring for ten years.

Write for valuable *plain-language* literature and booklet "How to Fit Piston Rings." Absolutely free. Let us tell you how our liberal dealer proposition can increase your profits.

Prices 35c and up

NO-LEAK-O PISTON RING CO.

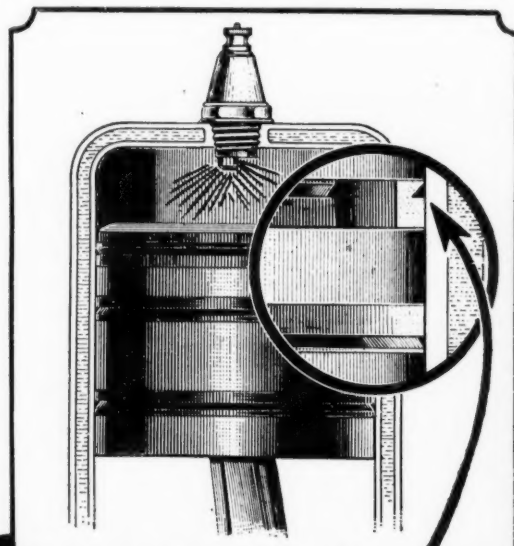
Dept. 364

Muskegon, Mich.

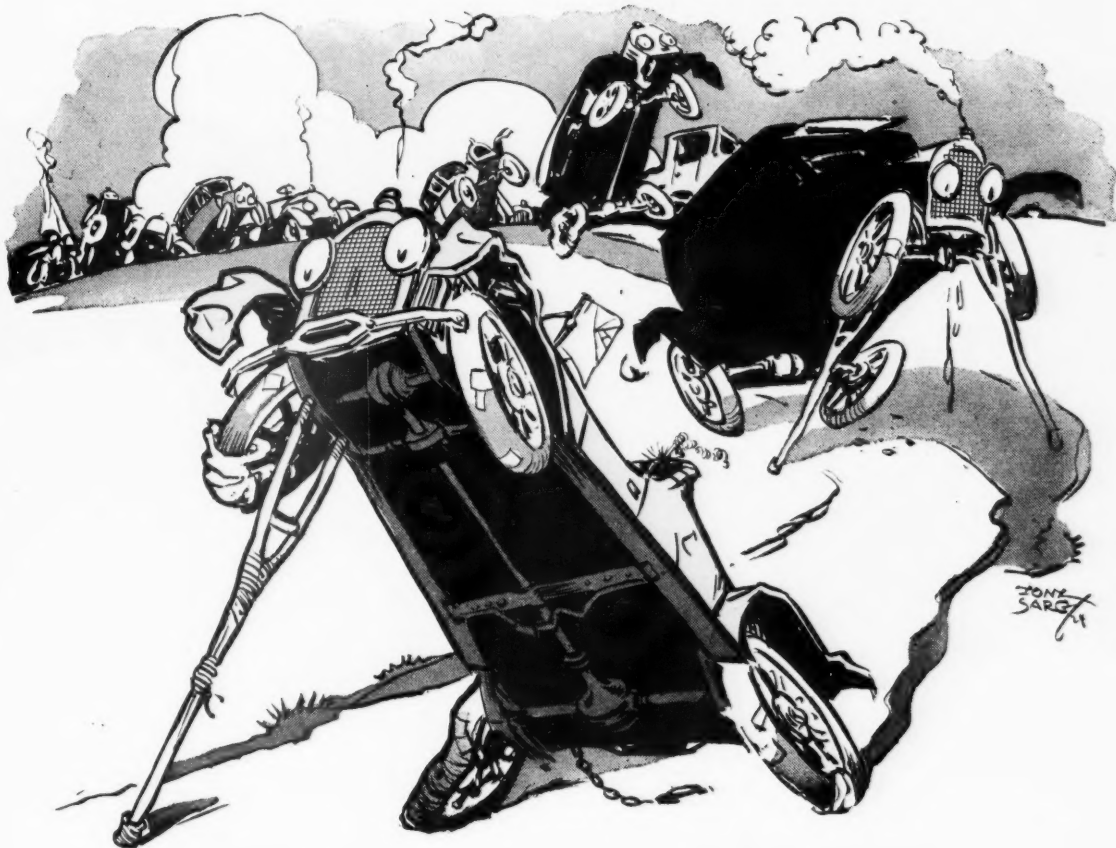
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Important: In buying piston rings insist on the genuine No-Leak-O with the original "oilSEALing" groove, packed in this standard package bearing the famous ring and seal, our registered trade mark. Beware of imitations.



No Gas Can Pass this Groove



How are they coming?

SPRING approaches. Worn down models of yesteryear are beginning to limp into your shop with sprains, weak joints and internal disorders. You are expected to put them on the road again.

It is your chance, not only to remedy the owner's complaint, whatever it is, but to examine each car for other ailments—repair them all completely and send the car out on the road again with a renewed youth and vigor.

The car owner wants you to do just this. He wants you to use the best of materials in your repairs. We are doing our best to provide you with such materials—as you will learn by reading the next few pages.

JOHNS-MANVILLE

Automotive Equipment

A large, detailed illustration on the left side of the page shows two hands holding a long, dark, curved strip of brake lining. The strip has a textured surface and some faint, illegible markings. The hands are positioned as if presenting the product. The background of the illustration is a simple line drawing of a vintage car driving on a road, with trees and hills in the distance.

Keep their cars well braked,

Brake lining business is all around you. It's driving by your place. It stops at your curb-pump for gas. It's right inside your garage on storage cars.

One car in eight needs relining—so the New York Police Squad discovered. One car in eight is a prospect for you. Think of your increased profits if you could get the relining business of one car in every eight that you come in contact with. We believe that you can. Some of our suggestions are shown on the right hand column of the opposite page.

Remember this

When you once get a prospect thinking about having his brakes relined—one of the best arguments that you can use to clinch the business, is the fact that you reline with Johns-Manville Asbestos.

Your prospect knows that Johns-Manville means "asbestos specialist." He knows that the safety of his car depends on the quality of his brake lining.

In fact, he thinks Johns-Manville lining is almost as good as we *know* it is—which is saying a lot.

Don't forget ~ the rest of the JOHNS-MANVILLE line ~

Johns-Manville Asbestos Clutch Facings
—These facings are easy to attach, being all drilled and counter-sunk—and you can order them directly from your Distributor's stock as you need them.

Johns-Manville Automobile Tape
—There are three things about this tape that users like. It is strong, it does not fray, and it stays sticky.

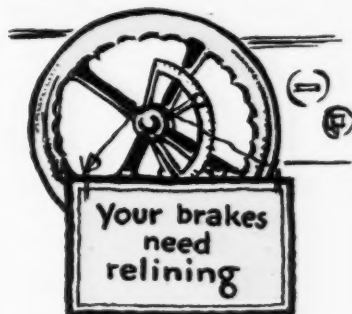
Johns-Manville Automotive Seigelite Sheet Packing—For gaskets on crank case covers, clutch covers, transmission and differential covers, etc.

Johns-Manville Automotive Service Sheet Packing—Has no equal for cylinder-head gaskets, intake and exhaust manifolds, and water pipe connections.

JOHNS- MANVILLE

Automotive Equipment

A few suggestions



Have your night man examine the brakes of all your storage cars. Where he finds relining necessary, he can attach a note to that effect on the steering wheel for the owner's information. There's a lot of business like this right inside your garage.



Put this attractive flange sign up on your shop-front. It'll help catch some of the brake lining business that drives by. Get yours from your distributor.



Get some of these advertisements in your local newspapers—over your own garage name. They not only go out and get the business, but establish a lot of goodwill that turns into business later on. Ask your distributor for the cuts—free.

Choose your distributor,

Alabama

Moore-Handley Hardware Co.,
Birmingham
Johnson Tire & Auto Co., Montgomery

Arkansas

Crow-Burlingame Co., Little Rock

California

Chanlor & Lyon Co., Fresno
The Banta Company, Los Angeles
Chanlor & Lyon Co., Los Angeles
Featherstone, E. A., Los Angeles
McCoy Motor Supply Co., Los Angeles
Chanlor & Lyon Co., Oakland
Weinstock-Nichols Co., Oakland
Kimball-Upson Co., Sacramento
P. W. Gavin Company, San Diego
Chanlor & Lyon Co., San Francisco
McCoy Motor Supply Co., San Francisco
Weinstock-Nichols Co., San Francisco
California Auto Supply Co., Stockton

Colorado

Auto Equipment Co., Denver
Foster Auto Supply Co., Denver
Motor Accessories & Tire Co., Pueblo

Connecticut

Hessel & Hoppen Co., New Haven
Motor Tire Service Co., Putnam

District of Columbia

National Electrical Supply Co.,
Rubel, Chas., & Co.

Florida

Baughman Company, G. Norman,
Jacksonville
Baughman Company, G. Norman, Miami
Baughman Company, G. Norman, Tampa

Georgia

Alexander-Seewald Co., Atlanta
Ozburn-Abston & Co., Atlanta
The Frank Corporation, Savannah

Illinois

Automobile Supply Co., Chicago
Chicago Automobile Supply House,
Chicago
Motor Car Supply Co., Chicago
Sheridan Auto Supply Co., Chicago
Teak Hardware Co., Quincy
Washington Auto Supply Co., Washington

Indiana

Orr Iron Co., Evansville
Lomont & Co., Fort Wayne
The I. J. Cooper Rubber Co., Indianapolis
Goodlin Auto Equip. Co., South Bend

Iowa

Cedar Rapids Auto Supply Co., Cedar
Rapids
Sleg Co., Davenport
Herring Motor Co., Des Moines
Repass Auto Co., Waterloo

Kansas

The Weldon Motor Supply Co., Salina
Southwick Auto Supply Co., Topeka
The Massey Hardware Company, Wichita

Kentucky

Peaslee-Gaulbert Co., Louisville

Louisiana

Shuler Auto Supply Co., New Orleans
Interstate Electric Co., Shreveport

Maine

The Farrar-Brown Co., Inc., Portland

Maryland

Auto Supply Co., Baltimore
Coggins & Owens, Baltimore

Massachusetts

Lincoff Supply Co., Boston
Motor Tire Service Co., Fitchburg
Duncan & Goodell Co., Worcester
Motor Tire Service Co., Worcester

Michigan

E. A. Bowman, Inc., Detroit
Tisch Auto Supply Co., Grand Rapids

Minnesota

Kelley-Duluth Co., Duluth
Minneapolis Iron Store Co., Minneapolis
Reinhardt Bros. Co., Minneapolis
Williams Hardware Co., Minneapolis
Nicols, Dean & Gregg, St. Paul

Missouri

Joplin Supply Co., Joplin
The Faeth Company, Kansas City
Ayers Auto Supply Co., St. Joseph
Beck & Corbitt Iron Co., St. Louis

Missouri (cont'd)

Fred Campbell Auto Supply Co., St. Louis
Geller, Ward & Hasner, St. Louis
Ozark Motor & Supply Co., Springfield

Montana

Northwestern Auto Supply Co., Billings

Nebraska

Nebraska Bulk Auto Co., Lincoln
Stor- Western Auto Supply Co., Omaha

Nevada

Nevada Auto Supply Co., Reno

New Hampshire

Thompson & Hoague Company, Concord

New Jersey

Economy Auto Supply Co., Newark
Pruden Hardware Co., Newark

New York

Albany Hardware & Iron Co., Albany
Martin-Evans Co., Brooklyn
H. D. Taylor Co., Buffalo
Barker, Rose & Clinton Co., Elmira
Weaver-Ebling Automobile Co., N. Y. C.
Pruden Hardware Co., W. E. N. Y. C.
Whittemore-Sim Co., Inc., N. Y. C.
The Olmsted Co., Inc., Syracuse

North Carolina

Carolinas Auto Supply House, Charlotte
Glasgow-Stewart & Company, Charlotte
Automobile Supply Co., Wilmington

North Dakota

Grant-Dadey Company, Fargo

Ohio

The Penn. Rubber & Supply Co., Akron
C. & D. Auto Supply Co., Cincinnati
The I. J. Cooper Rubber Co., Cincinnati
The Penn. Rubber & Supply Co.,
Cincinnati
The Penn. Rubber & Supply Co.,
Cleveland
The I. J. Cooper Rubber Co., Columbus
The Penn. Rubber & Supply Co.,
Columbus
The I. J. Cooper Rubber Co., Dayton
The Penn. Rubber & Supply Co., Toledo
The Penn. Rubber & Supply Co.,
Youngstown

Oklahoma

Severin Tire & Supply Co., Oklahoma City
Severin & Company, Tulsa
Machinery & Supply Co., Tulsa

Oregon

Wiggins Company, Inc., Portland
Chanlor & Lyon Co., Portland

Pennsylvania

Motor Accessories Co., Allentown
Central Supply Co., Altoona
The Penn. Rubber & Supply Co., Erie
Front Market Motor Supply Co.,
Harrisburg
General Auto Supply Co., Harrisburg
Johnstown Auto Co., Johnstown
General Auto Supply Co., Lancaster
The Penn. Rubber & Supply Co., Oil City
Berrodin Auto Supply Co., Philadelphia
Gaul, Derr & Shearer Co., Philadelphia
Roberts Electric Supply Co., H. C. Phila.
Dyke Motor Supply Co., Pittsburgh
Jackson Motor Supply Co., Pittsburgh
General Auto Supply Co., York

Rhode Island

Belcher & Loomis Hardware Co.,
Providence

South Carolina

Frank Co., Inc., C. D., Charleston
D. W. Alderman, Jr., Inc., Florence
D. W. Alderman, Jr., Inc., Greenville

South Dakota

L. & L. Motor Supply Co., Sioux Falls

Tennessee

Southern Auto Supply Co., Chattanooga
The I. J. Cooper Rubber Co., Knoxville
Ozburn-Abston & Co., Memphis
Auto Supply Co., Nashville
The I. J. Cooper Rubber Co., Nashville

Texas

Ferris-Dunlap Co., Dallas
Tri-State Motor Company, Inc.,
El Paso
The Equipment Co. of Texas,
Fort Worth
Meyer Co., Jos. F., Houston
The Southern Equipment Co.,
San Antonio
McCauley-Ward Motor Supply Co.,
Waco

Utah

Inter-Mountain Electric Co.,
Salt Lake City
Motor Mercantile Co., Salt Lake City

Vermont

Vermont Hardware Co., Burlington

Virginia

The Owens-Merritt Co., Danville
Piedmont Hardware Co., Danville
Crump Co., Benj. T., Richmond
Meadows-Price Co., Roanoke

Washington

Chanlor & Lyon Co., Seattle
Reynolds & Reynolds, Seattle
Chanlor & Lyon Co., Spokane
Holley-Mason Hardware Co., Spokane
Chanlor & Lyon Co., Tacoma
Reynolds & Reynolds, Tacoma

West Virginia

Williams Hardware Co., Clarksburg

Wisconsin

Clemons Auto Supply Co., Eau Claire
Andrae & Sons Co., Julius, Milwaukee
Shadbolt & Boyd Iron Co., Milwaukee
Tisch Auto Supply Co., Milwaukee
Western Motor Supply Co., Milwaukee

Wyoming

Auto Equipment Co., Casper

CANADA

Alberta

The Motor Car Supply Co.,
of Canada, Ltd., Calgary
The Motor Car Supply Co.,
of Canada, Ltd., Edmonton

British Columbia

Marshall-Wells, B.C., Ltd., Vancouver

Manitoba

Wood, Vallance, Ltd., Winnipeg

New Brunswick

The Lounsbury Company, Ltd.,
Newcastle

Nova Scotia

J. J. Snook Ltd., Truro

Ontario

A. Chown & Co., Ltd., Kingston
A. Workman & Co. Ltd., Ottawa
Hyslop Brothers Ltd., Toronto
Johnston-Deane Ltd., Toronto
Samuel Trees & Co., Ltd., Toronto
Bowman-Anthony Co., Windsor

Saskatchewan

Wood, Vallance, Limited, Regina

FOREIGN

Australia

Duncan & Co., Melbourne
Cornell, Ltd., Adelaide
Chas. Atkins & Co., Ltd., Perth
Canada Cycle & Motor Agency,
Brisbane
Hislop, Lloyd & Co., Sydney

Great Britain and Ireland

A. C. R. Greene & Co., Ltd., London

Japan and Korea

Takemura Company, Yokohama

Jugo-Slavia

William H. Smyth, Belgrade

Mexico

Mexico Auto Supply Co., Mexico City

New South Wales

Hislop, Lloyd & Co., Sydney

New Zealand

Jas. J. Niven & Co., Ltd., Wellington

Norway, Sweden and Denmark

F. Bulow & Co., Copenhagen

Panama

The Torbert Wholesale Rubber
& Accessory Co., Panama City

Spain

Luis R. Villamil, Madrid

Sweden

A. B. Stern & Stern, Stockholm

Union of South Africa

Bartle & Co., Ltd., Johannesburg

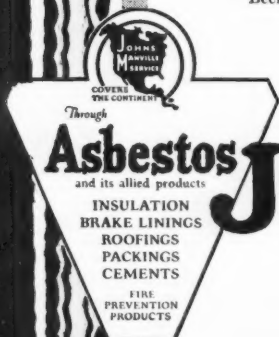
Uruguay

Clericetti & Barrella, Montevideo

JOHNS-MANVILLE Inc., 294 Madison Ave., at 41st St., New York City

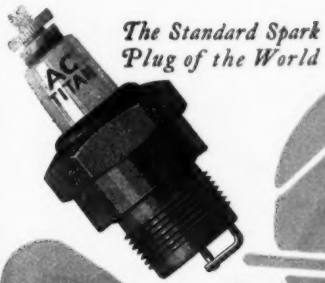
Branches in 61 Large Cities

For Canada: CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto



JOHNS-MANVILLE

Automotive Equipment



More than 85 per cent of all cars and trucks produced in this country, Fords excluded, are factory equipped with AC Spark Plugs. Among these cars are:

Buick	Hupmobile
Cadillac	Jewett
Chalmers	Jordan
Chandler	LaFayette
Chevrolet	Marmon
Chrysler Six	Maxwell
Cleveland	Nash
Dodge Brothers	Oakland
Dort	Oldsmobile
Durant	Paige
Essex	Peerless Six
Hudson	Star
	Yellow Cab

This tremendous, ready-made market for AC's is right at your door and will always be there in ever-increasing size.

There is a type and size for every motor

Owners Want AC Spark Plugs

The reason is that year after year more than 200 manufacturers use them as factory equipment.

AC Spark Plugs are a safe investment because they are backed up by this equipment business as well as by strong national advertising, which creates a big demand for them not only from the owners of AC-equipped cars but from the owners of other makes as well.

Every day this demand grows larger.

AC's are the best known, the easiest selling and most profitable spark plugs to stock.

The AC 1075 for Fords is a big seller because it is a better plug for Ford engines—it satisfies the owner and makes money for the dealer.

SPARK PLUGS SPEEDOMETERS

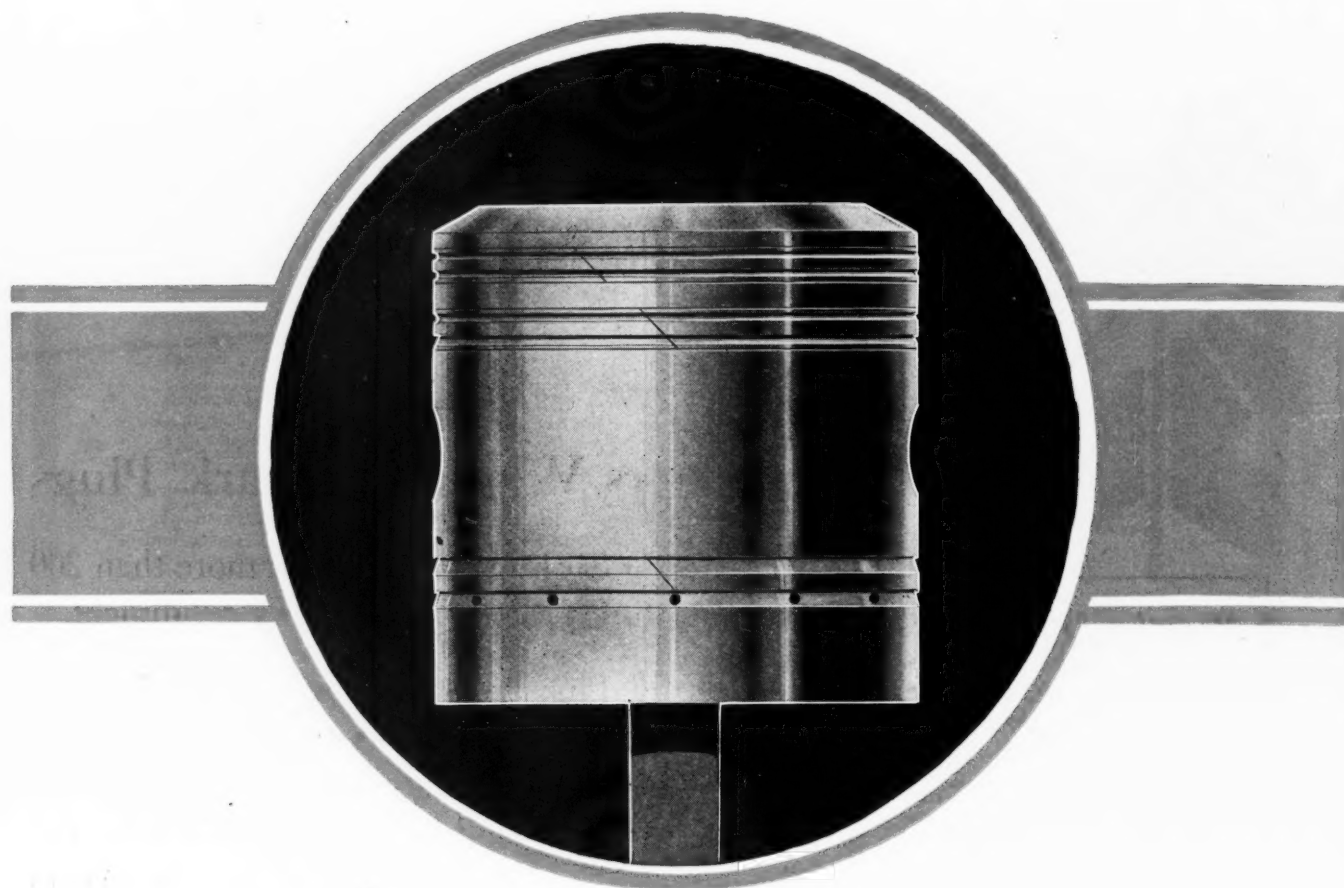


*The accurate, easily installed
Ford Speedometer can be
sold to every Ford owner*

AC Spark Plug Company, FLINT, Michigan

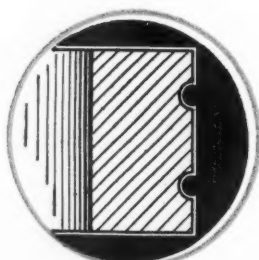
Makers of AC Spark Plugs—AC Speedometers

U. S. Pat. No. 1,135,727, April 13, 1915. U. S. Pat. No. 1,216,139, Feb. 13, 1917
Other Patents Pending



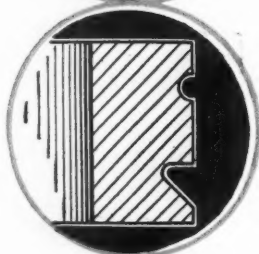
Burd "Special" Piston Rings

An Unbeatable Combination



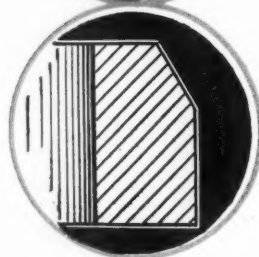
Top Ring

The top ring is a compression ring having two half round grooves which fill with oil as the piston passes upward. The oil in these grooves insures proper lubrication of the top of the Ford cylinder following the explosion and also acts as an oil seal.



Intermediate Ring

This ring has two grooves. The lower groove is "V" shaped and acts as a reservoir into which the excess is trapped. The top groove of this ring acts as an oil seal and lubricator of the cylinder.



Skirt Ring

The skirt or lower ring is a patented beveled edge ring which smooths out the oil thrown on the cylinder faces by the action of the cranks to a uniform thickness upon the up stroke, and when the lower edge of the piston groove is chamfered and drilled, serves as a scraper ring on the down stroke.

**A Brand New Idea in Piston Rings
A Brand New Way of Packing
A Brand New Package
At a Sensational Price
Backed by a Reliable Guarantee**

As a result of our experimental work extending over a period of two years, we now offer for the first time in the history of the piston ring industry, a "Special" Piston Ring Set for Ford motors.

All previous efforts to cure oil pumping in Ford motors have been attempted upon the theory of stripping the cylinders of as much oil as possible by the use of a special oil ring of one form or another.

BURD HIGH COMPRESSION RING CO.



For Ford Motors

Retails for Only

\$3.50

The Burd "Special" Piston Ring Set has been designed especially for Ford motors with the end in view of securing the desired compression and the *proper distribution of oil*.

Numerous types of piston and ring assemblies were used. All of the popular grades of oil and gasoline were employed. The extremes of weather conditions were encountered.

The proper tension of each of these rings also had to be ascertained so that correct distribution of oil could be secured. The cylinders had to be properly lubricated at all points and yet free from excess oil and its consequent evils, and permit the rings to function as compression rings.

As a result of these numerous tests, a combination of rings for the Ford motor was designed, each ring having slightly different characteristics and a separate function to perform.

Backed By This Guarantee

We guarantee that, when properly installed, Burd "Special" Piston Rings for Ford motors will overcome oil pumping, give full power and insure smooth running, or purchase price will be refunded.

Attractive Dealers' Discounts

ROCKFORD, ILLINOIS, U. S. A.

*Slightly higher in Canada and West of Rockies
Attractive Jobbers' Discounts*



Handy Package

Three rings—one of each type—packed in individual cartons. Four individual cartons in each package—a complete set of piston rings for the Ford motor.

Sizes: Made in $3\frac{3}{4} \times \frac{1}{4}$ and .0025, .005, .010, .015, .020, .030, .040, .050 and .060 oversize. Diagonal Cut for Ford motors only.

Let This Talkative Salesman Work For You



The *Ajax Display Stand* is a tireless, hardworking salesman. It not only suggests "Buy a Jack" to car owners but answers their questions as to proper size, etc. The four Ajax Red Base Jacks it sells meet every jack need in the passenger car and light truck field. Because every one of the four is a steady seller the turnover

is rapid and the net profit large. Your jobbers salesman will be glad to tell you how you can secure this stand FREE without making a big investment. Let the Ajax Jack Display Stand, with its four jack line, reduce your jack investment, speed up your sales and turnover and increase your profit from jack sales.

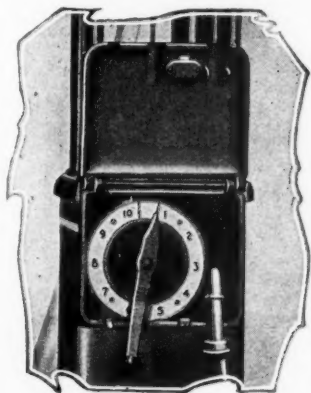
This Stand can be adjusted
to form a *Counter Display*

Ajax Auto Parts Co., Dept. A-503, Racine, Wis.

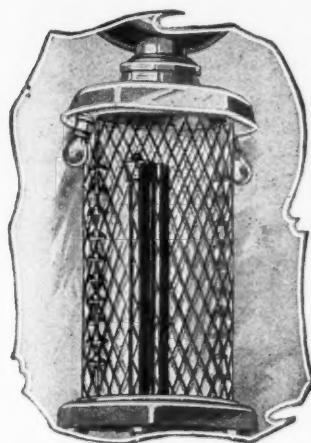
AJAX RED BASE JACKS

*Ajax Jacks Are Standard Equipment on 22 Well-Known Makes of Automobiles.
This Advertisement Will Appear in Leading Automotive Magazines.*

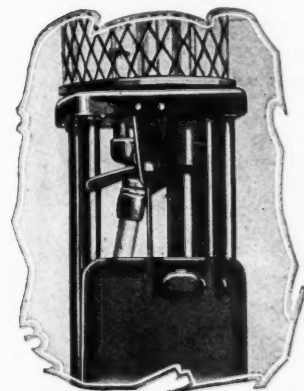
BOWSER
ESTABLISHED 1885



Operating handle of Bowser Visible—simple but efficient—fully described in new bulletin.



For details of Bowser self-measuring device see page 10 of the new bulletin.



Discharge handle is directly underneath glass cylinder.

Are You Giving Away Gas?

Our new bulletin tells why many stations aren't making the money they should — shows that they're giving away gasoline!

It's all a question of exact accuracy in measuring out gas from a visible cylinder. The eye can't do itself justice, of course, and so the eye's owner cheats himself. Half a pint given away means a loss of $6\frac{1}{4}\%$ of the net profits on every 5-gallon sale.

The new Bowser Sentry Visible is absolutely accurate because it doesn't depend on eye-guessing. It has full mechanical measurement, and not a drop of gas is served free. The pump is electrically-driven, is built of Bowser quality materials by Bowser workmen—is built right, to last long.

For copies of this new bulletin, telling how filling station profits can be checked up, address Dept. A14, at Fort Wayne, please.

S.F. BOWSER & COMPANY, Inc.

Pump and Tank Headquarters

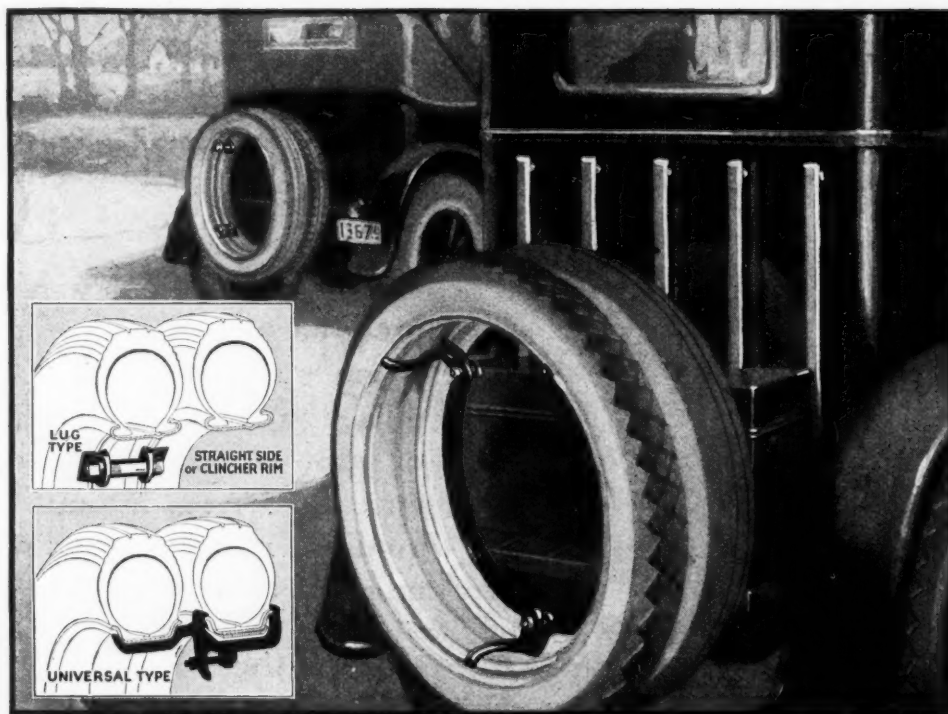
FORT WAYNE, INDIANA.

Sales and Service Offices and Representatives Everywhere

BOWSER
ESTABLISHED 1885

A Sales Wedge

STONE TIRE CARRIER



Opens the Way to 3 Profits!

1. It sells itself.
2. It helps sell an extra rim.
3. It helps sell an extra tire and tube.

to Bigger Profits

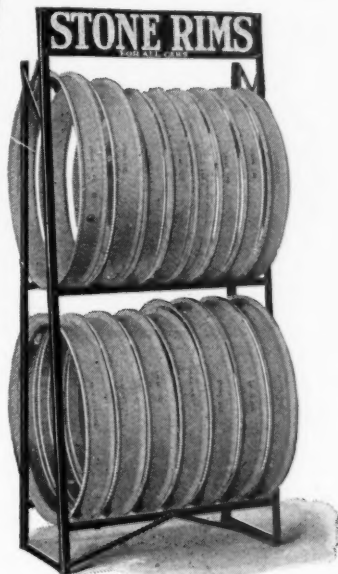
The STONE Tire Carrier Is a Real Profit-Maker!

Pick the products your customers will ask for. Pick the profit-makers. When you sell the Stone Carrier you open the way for the sale of an extra rim and an extra tire and tube.

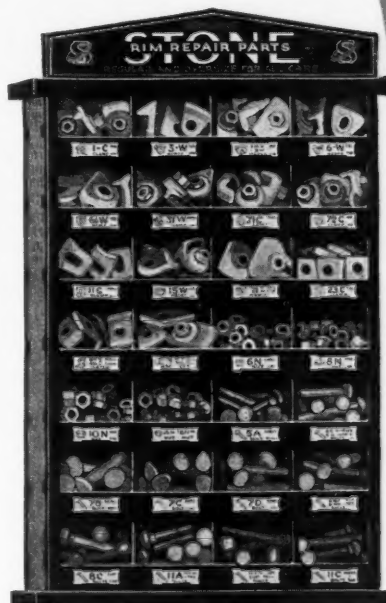
The Stone Tire Carrier fits any car. In three units, super-strong, electro-galvanized, it bolts tight to the "regular" spare rim. Does not touch the tire. No chafe or rattle. No ropes or straps. No interference with the tire covers, tail light or license plate. On or off in a jiffy.

Stock	For Rim Size	List per set of 3
3 1/2" SS — 3 1/2"	Straight Side Rims	\$3.00
4" SS — 4"	" " "	
4 1/2" SS — 4 1/2"	" " "	
Ford Special and other light cars		
3 1/2" C — 3 1/2"	Clincher Rims	\$2.50
	Lug type for Fords	\$1.00

STONE Rims and Rim Parts for All Cars



Stone Rim Parts are of first quality tough malleable iron — fully guaranteed. The Stone Rim Parts Cabinet or Board and our Rim Display Rack are ideal for showing and selling these money-makers.



THE STONE MANUFACTURING CO.

1502 S. Michigan Ave., Chicago, Ill.

The Stone Manufacturing Company, Inc.

135 Wooster St., New York, N. Y.

FREE!

CABINET FREE with Rim Part assortments. DISPLAY BOARD FREE with smaller assortments.



Take Advantage of the "Breaks"

"TRICKY tools" the motorist calls them. He doesn't buy them. He doesn't even ask for them. They just happen and when called upon in an emergency, fail.

Show Bethlehem Quickway Wrench Sets to motorists who like

to do the easy jobs around a car themselves.

The "C Special" set takes care of 90% of the nuts needing adjustment on all cars and the Mechanics D set (which a lot of motorists *will buy*) will do every job around a car that requires a wrench.

sell motorists Quickway Tools

The Best of the Bethlehem Line:

De Luxe Radiator Caps
For all cars.

Bethlehem Spark Plugs
Standard equipment on Stutz, Studebaker Light Six and other famous cars and trucks.

Each is the best of its kind and brings the dealer satisfactory profits and satisfied customers. Write for catalog and trade discounts.

The Bethlehem Quickway Wrench Set line is complete. Six styles and assortments. Each priced less than you imagined and guaranteed with a money-back guarantee.

Look carefully at the C Special Set shown on the left. There's a ratchet handle, regular L-handle, short bar for cramped quarters and eight deep hexagon sockets. Each socket is cyanide hardened and you sell this set for \$2.75! Here's salable merchandise, priced right, that every dealer can sell!

C. H. Schwab
President.

BETHLEHEM SPARK PLUG CO. Bethlehem, Pa.

BETHLEHEM



C Special Set



Mechanics D Set

Takes care of smallest generator nut up to largest nut on any car. Has 23 deep sockets, regular L-handle, T-handle, drop-forged ratchet handle, three short bars and universal for close clearances. Complete set packed in a husky, good-looking box.

QUICKWAY WRENCH SETS

For Every Purse and Every Purpose

new MILWAUKEE TIMER *for* FORDS

(BAKELITE CASE)

—with a Bakelite case, the biggest improvement ever made in a standard timer!

Just let a Ford-owner-customer get his hands on it. That rich brown Bakelite shell, glistening with beauty and quality, an added feature of the roller-type timer that has been the standard for years—that will sell him!

Then show him that the Milwaukee is now *absolutely short-circuit-proof*, and at *no increase in price*. Why, man, you'll sell 'em by the score!

Advertised to your customers as no timer ever has been before. Saturday Evening Post, American, Country Gentleman, Sunset and many sectional and state farm papers.

It's going to be a great timer year for you, if you push *Milwaukee!* Order now, in the trim Display Box—it sells 10 quick!

MILWAUKEE MOTOR PRODUCTS, INC.
MILWAUKEE WISCONSIN

Bone-dry Egyptian fiber race pressed to a tight fit in the Bakelite case. Remains satin-smooth for thousands of miles.

Fine steel contact points with welded stems. Locked in position. Extra thick throughout for longest life.

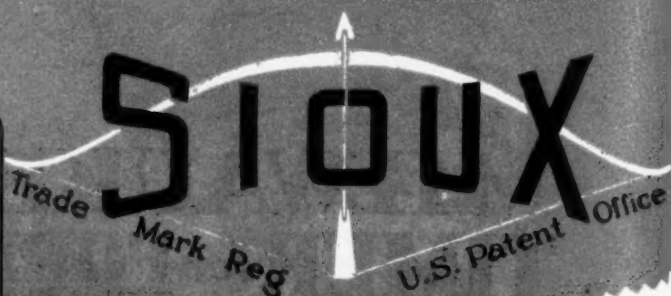
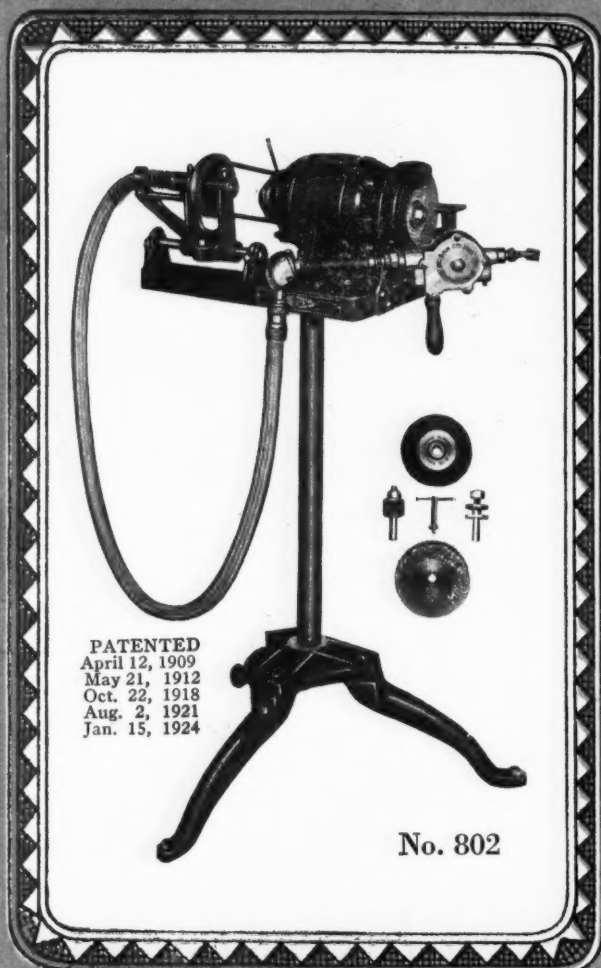
First Bakelite case on a roller-type timer. Makes the Milwaukee absolutely "short-proof". Puts it in a class with high-priced ignition units.

Famous Milwaukee Timer brush assembly. Two bronze castings, fitted and gauged for accurate alignment. Hardened steel roller, finished like a ball bearing.



No
increase
in price.
Retails
at
\$ 2
(\$2.75 in
Canada)

Display Cut-out—Free! Three-color Window and Counter display. Holds a Milwaukee Timer from stock. New process—oil colors, extra brilliant, washable. Sent free, postpaid. Write us direct.



Save Time and Labor—Increase Profits

EVERY job of valve lapping, drilling, reaming, polishing, and carbon removing can be done *better*, quicker and at smaller labor cost, with the Sioux Flexible Shaft and Attachments. It takes the power to the job—exactly where you want it.

For Valve Lapping it is especially handy and efficient. The 3-speed pulley provides the correct speed, low for large valves, higher for smaller valves. The clutch enables you stop and start at will.

For Emery Wheel Grinding you can take the emery wheel to the work and get in to otherwise inaccessible places. Especially handy in welding work for smoothing out the weld.

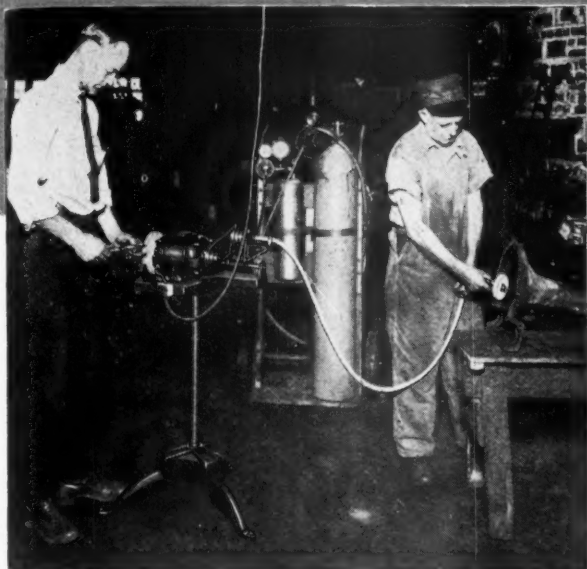
Special Feature. A 6 in. x $\frac{1}{2}$ in. emery wheel—equipped with guard and tool rest—permanently attached to the motor for grinding tools and other small parts.

Write For Full Information

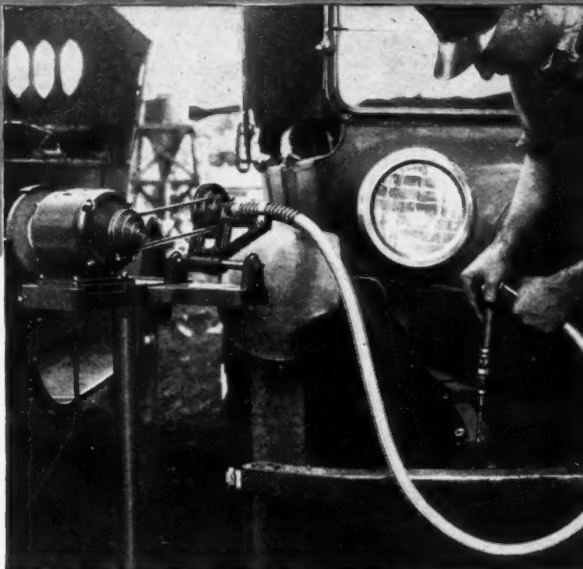
ALBERTSON & CO., Sioux City, Ia.

Sioux Flexible Shaft

Sold By All Live Jobbers



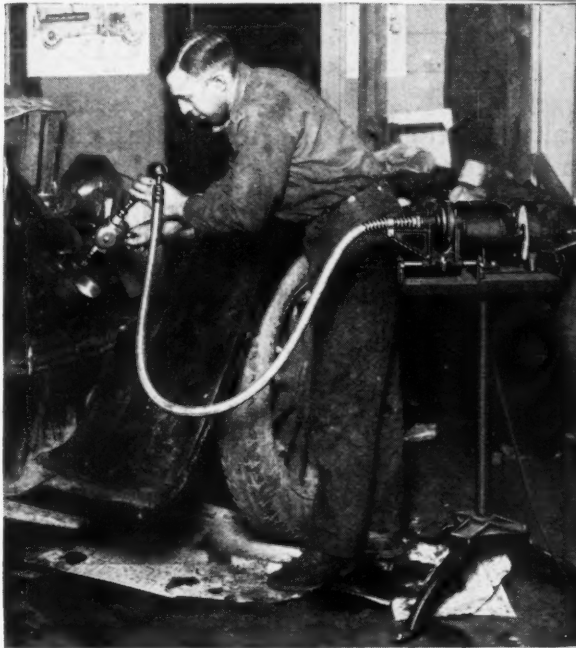
For Emery Wheel Grinding—this photo shows the Sioux in use for smoothing out welding work; also the emery wheel attached to the motor being used for grinding tools.



For Drilling—there are many jobs like this where the Sioux Flexible Shaft comes in mighty handy.



For Carbon Removing—the Sioux Flexible Shaft and Carbon Removing Brush saves lots of time and labor.

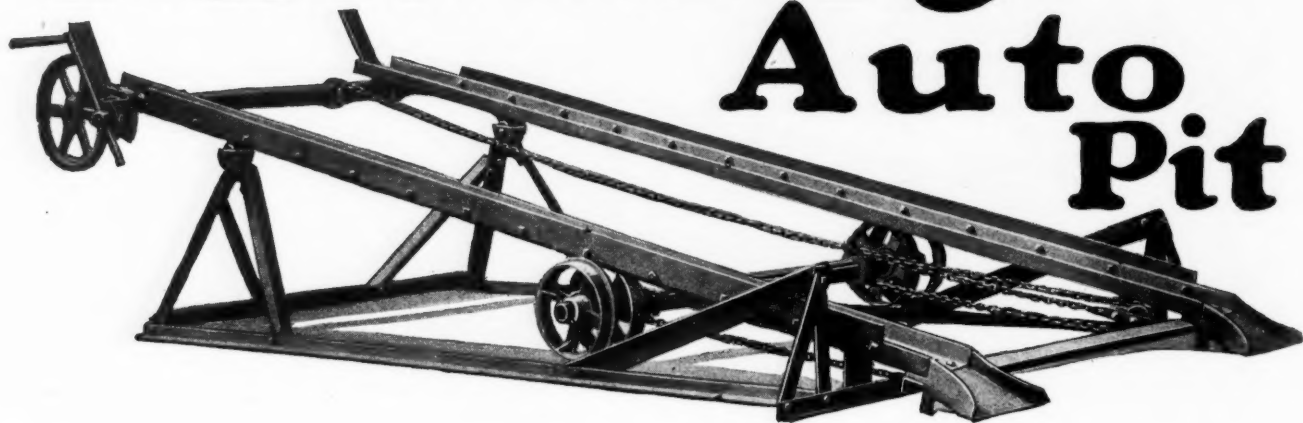


Valve Lapping is a quick job with the Sioux Flexible Shaft and Sioux Valve Grinder Attachment.

and Attachments



Get a Manley Auto Pit



The first successful one-man device for elevating a car

Takes up the space of only a single car in your Garage. Run the car on the track under its own power. Turn the crank for sixty seconds, and up it goes, thirty inches from the ground and in a horizontal position, ready to efficiently work under the chassis.

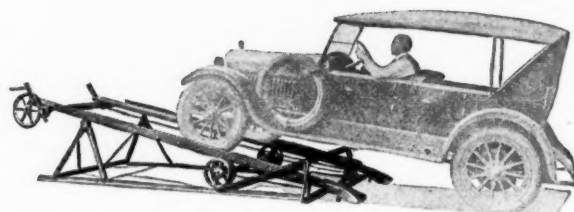
The pulling chains are close to the tracks on each side, and there is no brace or cross-member anywhere to interfere with getting at any part of the chassis.

The car rests upon steel tracks, supported on a steel foundation. Perfectly safe. Cannot run off or come down. Thoroughly braced and rigid. You can pull as hard as you want on any part of the chassis, with the assurance the car will not swing or surge.

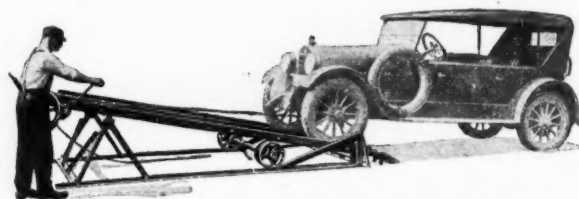
Efficiency in the Shop is now demanded by motorists, and the Manley Auto Pit produces more efficiency in every shop. The antiquated practice of trying to do precision work on a creeper must go and GO FAST since the introduction of the Manley efficient Auto Pit.

Write us for full details. Order from your Jobber.

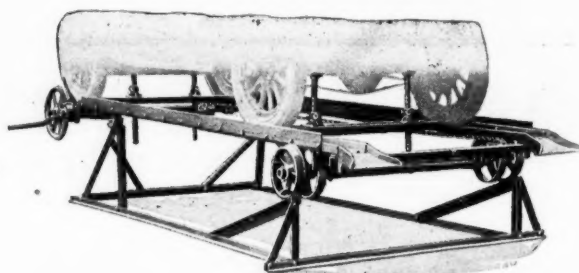
MANLEY MFG. CO., York, Pa.



Run the car up the tracks under its own power. Nothing to adjust, nothing to attach or get ready, no preliminary work. This takes thirty seconds. Turn the crank for sixty seconds, elevating the low end of the car thirty inches from the ground—an ideal working height.



A car with a dead motor is pulled up by using one of the chains.

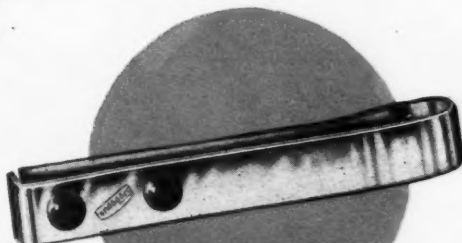


Car elevated. Note the four Jacks supporting the car from its frame. Indispensable for properly adjusting four-wheel brakes, changing springs, etc.

At last!—

protection... without projection!

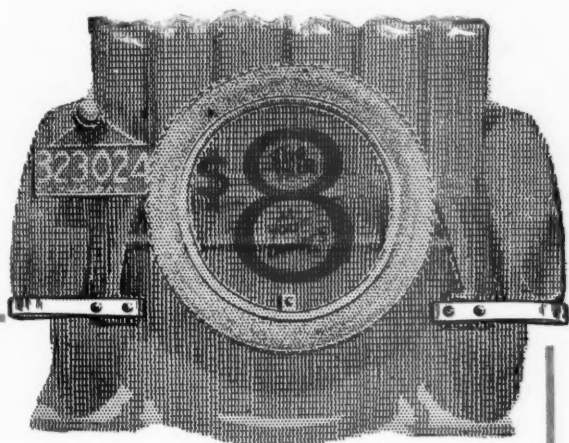
At last!—full and fool-proof rear-end “protection without projection”! TODAY—get busy and tell your customers about the sensational new



*Spare tire takes care of full-centre bump.
The FENDAGARDS do the rest!*

FENDAGARDS do not interfere with spare tire or jacking up of car. They eliminate danger of “hooking” another car in parking or cutting in. And a FENDAGARD-equipped car does not require a 1 inch extra parking space!

What a smart, finished appearance FENDAGARDS will impart to any “rear-end!” No wonder they are proving SPOT SPELLERS at the low retail price of \$8 the pair, complete. Liberal discounts to the trade—get YOURS!



Notice: We hold BASIC PATENT rights to make and sell the FENDAGARD. Infringements will be vigorously prosecuted.

Attached in 10 minutes to rear spring shackles.

**NO EXTRA FITTINGS
TO CARRY IN STOCK!—**

—it's “all in the box!” Fits all cars having standard (Hotchkiss) springs.

**Sold ONLY thru
regular JOBBER-
to-DEALER chan-
nels**

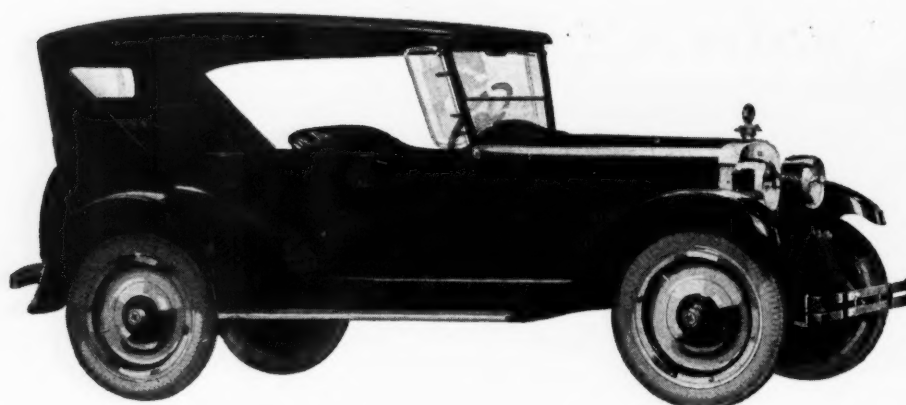
Write TODAY

JOBBERs and distributors: Write now for rich open territory—to:

The FENDAGARD SALES CORP.
of Springfield, Mass.

Rickenbacker

A • CAR • WORTHY • OF • ITS • NAME



Intrinsically— The Best Car Shown This Year

If you could have seen and appraised each car exhibited in those wonderful displays of Automobiles in the recent Automobile Shows without at the same time seeing the price tags;

—if, in other words, you could have enjoyed the privilege that was accorded leaders in the trade, of a pre-view of all the exhibits just as the coverings were removed and before price tags had been attached;—

—if you possessed the engineering knowledge and mechanical acumen to judge point for point on that basis alone—and without knowing the price of any;—

You would endorse the judgment of a certain famous European engineer who exclaimed:

“That Rickenbacker car is, in points of fine engineering and construction and completeness of equipment, the best car on this floor—what is its price?”

Try, if you can, to forget the price; or, if you cannot do that, just suppose the price of the particular Rickenbacker model in mind were just twice what it is;—

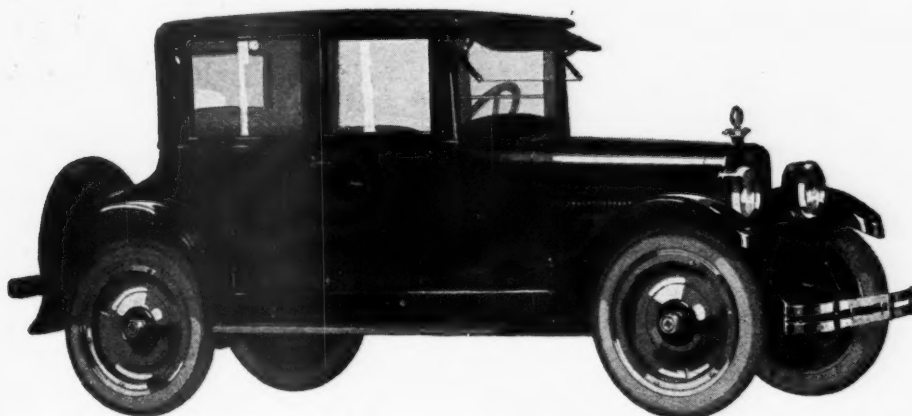
Then study each, critically—minutely. If you do that, you will select Rickenbacker—regardless of the price.

When you sell the Rickenbacker you can feel that the purchaser has received twice his money's worth, plus that Pride of Ownership which goes with the possession of a Rickenbacker Six.

4 ~ Wheel Brakes

Rickenbacker

A • CAR • WORTHY • OF • ITS • NAME



In any event, see to it, that the car you sell has the following features:

A Vibrationless Motor
Ball Bearing Steering
100 per cent Lubrication
Two Fly Wheels
Double Depth Frame
An Air Cleaner
Disc Steel Wheels
4-Wheel Brakes

For, if you handle a car lacking any one—or all—these fundamental improvements, you are selling a car that is already obsolete.

The purchaser will surely suffer an excessive depreciation in his first six months of ownership.

And if he pays extra for such essentials as: Bumpers (front and rear), Shock absorbers; Motometer, Motometer Lock, Motometer wings; Folberth automatic windshield cleaner; Clock; Wind-Wings; Drum Tire cover; Transmission lock or 4-Wheel Brakes—then he is buying a car that is only partly complete—for Rickenbacker has established a new rule by making all these things standard.

"Nothing Else to Buy," expresses that standard—for when it is delivered to the purchaser at the regularly advertised price, his Rickenbacker is complete to the last detail—the last desirable feature.

Rickenbacker Motor Company
Detroit - - Michigan

Sport Phaeton, \$1595

Sport Roadster, \$1645

Coupe, \$2035

Sedan, \$2135

Prices are f. o. b. Detroit—plus war tax

4 ~ Wheel Brakes

*Balloon tires
of course are
included in
the line*



One



**The Victor Rubber Co., Dept. A
Springfield, Ohio**

Please send me the full details of the
new Sales Plan. Tell me how it will
immediately sell tires to quality buyers.

Name

Address

Other Tires Handled.....

out of four will buy!

Our new Sales Plan has been selling, for Victor dealers—one out of every four tire prospects. That's some selling! It's worth looking into.

Victor-Springfield Cords are repeat sellers. Their distinctive massive tread and clean cut lines attract prospects. Their downright goodness makes users enthusiastic—means sure resales.

Our new Sales Plan has brought immediate results in terms of actual sales to car owners. An average of one out of every four have bought—and every Victor-Springfield Cord in use is a constant advertisement.

We are now ready to produce a substantial **QUALITY** business for *one good dealer in each territory*. To this dealer we offer a most liberal franchise—backed by our co-operation which includes the actual selling of the tires.

Victor-Springfield Cords are the finest tires produced in all our 22 years of tire building. They talk for themselves, whether in your racks and windows or running on your customers' cars. There are real profits for you in this quality proposition.

The coupon brings you the new plan without obligation. Mail it at once—only one dealer will be given the Victor franchise in your locality.

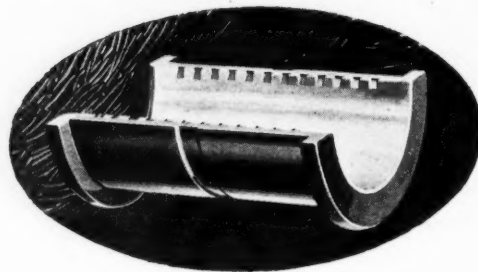
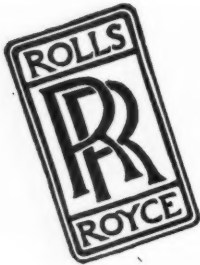
The Victor Rubber Co. Springfield, Ohio

Makers of tires for more than 22 years



VICTOR

SPRINGFIELD CORD



Mogul Bearings Keep Good Company

As a man may be judged by the company he keeps so can a product be judged by those whose appreciation it wins.

Mogul bearings have been examined, tested and analyzed by leading automotive engineers and metallurgists. They have withstood most searching tests by this fraternity and have been pronounced supremely good.

Published herewith are trade-marks of a few of the automotive manufacturers with whom Mogul bearings are standard. We believe these trade-marks are indicative of the Superior quality of Mogul bearings.




MUZZY-LYON COMPANY
DETROIT MICHIGAN

Mogul

Engine Bearings and Bearing Alloys



DURANT STAR FLINT SIX ROADKING SPEED TRUCK

VERY Durant Product provides a big opportunity for men who know how to merchandise cars. Good merchandisers in the passenger car and speed truck business are meeting with great success with the Durant Products listed above.

Send for a description of each line—a money-making territory near you may be open.

DURANT MOTORS, INC.

Sales Promotion Division
Long Island City, N. Y.

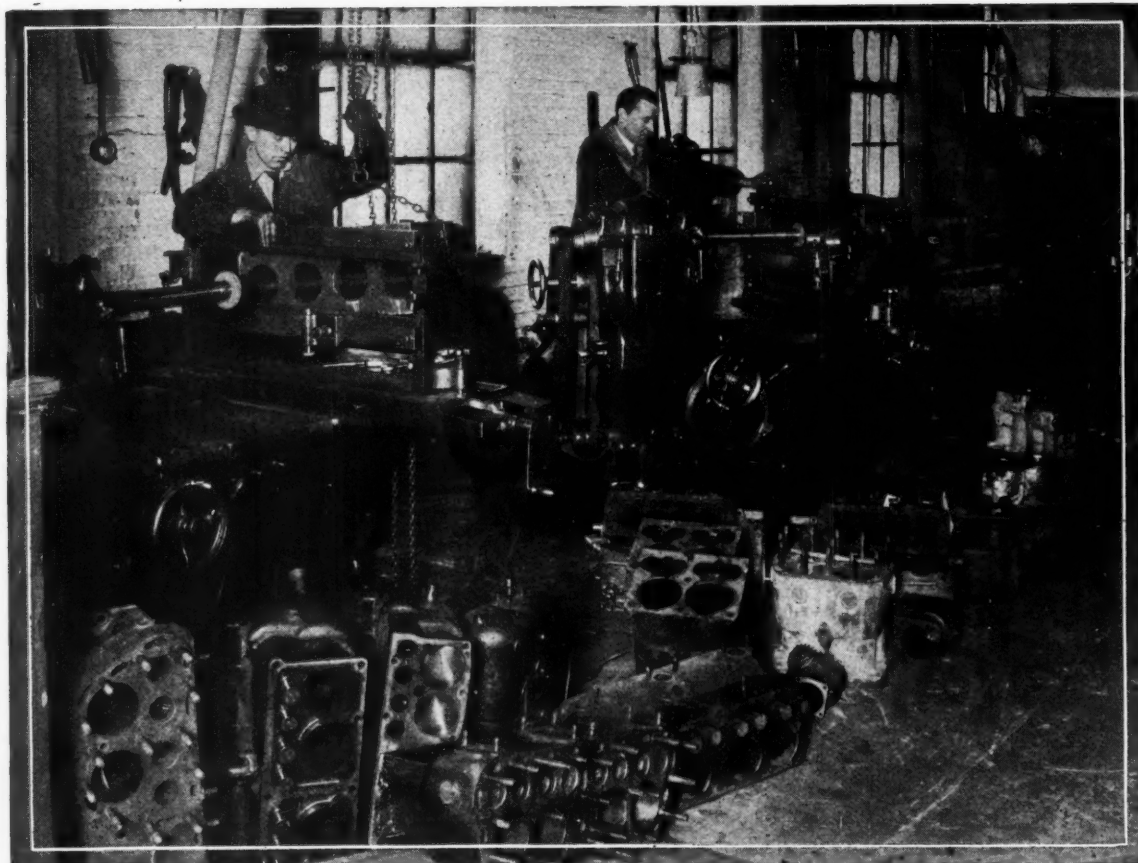
Manufacturing and Assembly Plants in:

ELIZABETH, N. J.
LANSING, MICH.

OAKLAND, CALIF.
LEASIDE, ONTARIO

MUNCIE, IND.
FLINT, MICH.

LONG ISLAND CITY, N. Y.
BRIDGEPORT, CONN.



This Opportunity in each Community—

*Thousands of cars
must have this
treatment*

The Registration figures on January 1st were 15,280,000. At least 80% of these are more than a year old.

This leaves millions of motors well on their way to the time when they must be Re-Ground. Hundreds of thousands of them must be attended to NOW this spring. Was there ever a more inviting business opportunity?

REGRINDING ON A GRINDING MACHINE is just as necessary to THE SERVICE STATION AND REPAIR SHOP—as it is to the car-builder.

The Landis Cylinder Grinding Machine is a thoroughly high grade tool, capable of the highest class of work.

It is extremely simple in operation. There are but two traverse speeds, two eccentric speeds and two spindle speeds.

Better servicing is the coming requirement. Make-shift methods can't make good—for long. Resizing by grinding on a real grinding machine makes a job that you can stand back of.

The Landis price will interest you.

LANDIS

LANDIS TOOL CO., WAYNESBORO, PA.

New York Office — 30 Church St.

And Now— Positive Protection— *that is simple and perpetual*



*Fits like a Glove
but not too tight!*

DEALERS!

Distributors of Scully Protectors are making big profits in constantly increasing volume. The new metal clip-cover now makes a very few sizes of covers fit all sizes of springs. This does away with the necessity of stocking many different sizes, for when attaching the cover is cut across the top at the location of the spring clip. The new metal clip-cover snaps over this cut leaving the rebound clip-nut free for observation and adjustment. Many good territories still open for exclusive representation. Yours may be one. Write for our interesting business proposal.

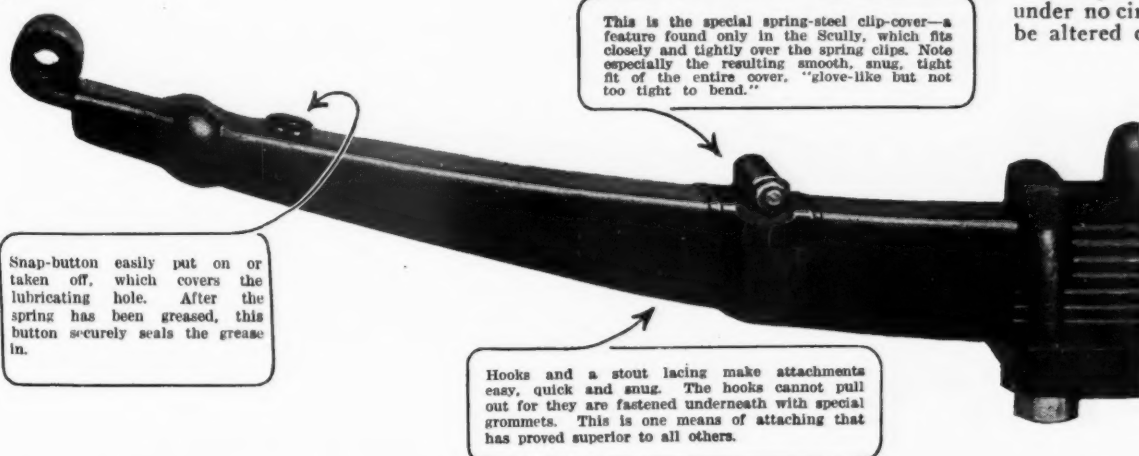
SPRINGS might be called a necessary evil. They are vitally important to car life and riding comfort, and yet if unprotected they rust, squeak, break and cause unlimited annoyance.

But just slip a pair of Scully Protectors on your springs and feel the difference. No more squeaks and rattles; water, sand and grit kept out. No chance now for rust to creep in, enormously increasing the friction between the leaves.

Scully Protectors fit smooth and tight the entire length of the spring, presenting a trim appearance in keeping with a well-groomed car. The new and patented clip-cover fits over the spring clips insuring a snug cover, "glove-like but not too tight to bend." Made of a superior grade Cellose leather, Scullys retain their shape and last as long as the car itself, affording positive protection under all conditions.



A metal cover fitting over the spring clip and protector insures a perfect fit. This is the only practical device ever devised for successfully fitting flexible steel spring covers over the spring clips. Spring clips are found essential by all car manufacturers and spring engineers and because of their very necessity they should under no circumstances be altered or removed.



This is the special spring-steel clip-cover—a feature found only in the Scully, which fits closely and tightly over the spring clips. Note especially the resulting smooth, snug, tight fit of the entire cover, "glove-like but not too tight to bend."

Snap-button easily put on or taken off, which covers the lubricating hole. After the spring has been greased, this button securely seals the grease in.

Hooks and a stout lacing make attachments easy, quick and snug. The hooks cannot pull out for they are fastened underneath with special grommets. This is one means of attaching that has proved superior to all others.

Scully Spring Protectors

THE HOUDAILLE COMPANY

::

1452 West Avenue, Buffalo, N. Y.

How to Explain the Lubrication Chart

"The Line of Least Resistance"

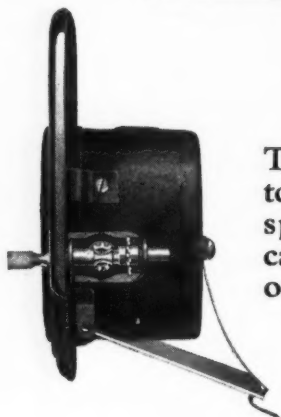


\$15.00

complete

(Western price)
\$15.50

- ADD OIL TO MOTOR—Keep level between crank case petcocks. Use light high grade oil.
- OIL—Fill oil cups. Give special attention to commutator.
- GREASE—Fill all grease cups including cup on speedometer swivel joint. Note—To lubricate new style fan bearing, unscrew plug and use heavy fluid oil.
- OIL—Apply oil to all bearing surfaces not supplied with oil cups.
- GREASE—Fill all grease cups. Grease wheel bearings liberally.
- OIL—Drain oil from crank case, following directions in Ford manual.
- GREASE—Add grease to differential not more than one-third full.
- GREASE—Reduction gears in steering wheel.



The chart is hinged to the bottom of the speedometer and can be snapped back out of sight when not in use

The Salesman—

"Mr. Car Owner, I think you will be interested in this new feature now furnished with the Stewart Speedometer. It's an exclusive feature made only for Ford cars. It's called a lubrication chart.

"You know that one of the greatest savings you could make would be to eliminate all motor and chassis repairs on your car

"Statistics have shown that 80% of motor troubles are due to lack of lubrication. Take proper care of a car and it will give you wonderful service and long life, with practically no unnecessary expense.

"This new lubrication chart idea makes it easy and interesting to take care of your car."

*Continued on
Opposite Page*

Stewart

CUSTOMBILT ACCESSORIES

USED ON 9 MILLION CARS

STEWART-WARNER SPEEDOMETER CORPORATION - CHICAGO, U. S. A.

Stewart Speedometer to Ford Car Owners



1

"When you have gone a hundred miles in your car, you will see a green numeral turn up on these dials that record your total mileage."



2

"Whenever you see a colored numeral turn up you just reach under the speedometer and pull down the metal chart that is hinged on the bottom of the speedometer. It is snapped back out of sight and the pressure of a finger releases it."

"The pressure of a finger releases it"



3

"You'll find a green dot on this chart which corresponds with the colored numeral that has turned up. You will note that it tells you just what lubrication is needed. In this instance the instructions are 'to add oil to motor.'"

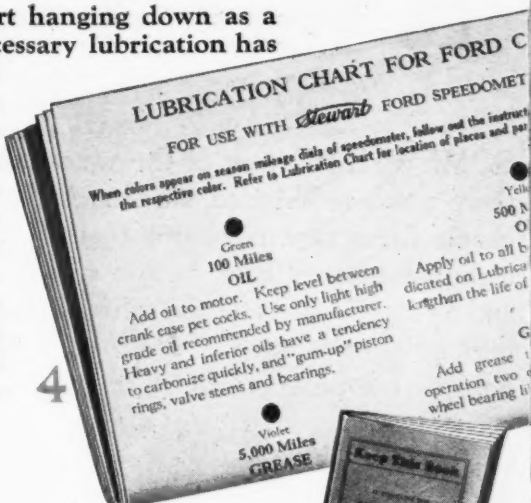
"For more definite information you can refer to the little booklet furnished free with each speedometer. In this handy booklet there is also an illustration of the chassis showing where all lubrication points are located."

"You can leave the chart hanging down as a reminder until the necessary lubrication has been taken care of. If you don't care to do the work yourself, you can have an understanding with your garage-man to take care of your car whenever he sees the chart hanging down. After the job is done the chart can be snapped back in place until another colored numeral turns up."



5

"The chart can be snapped back in place"



4

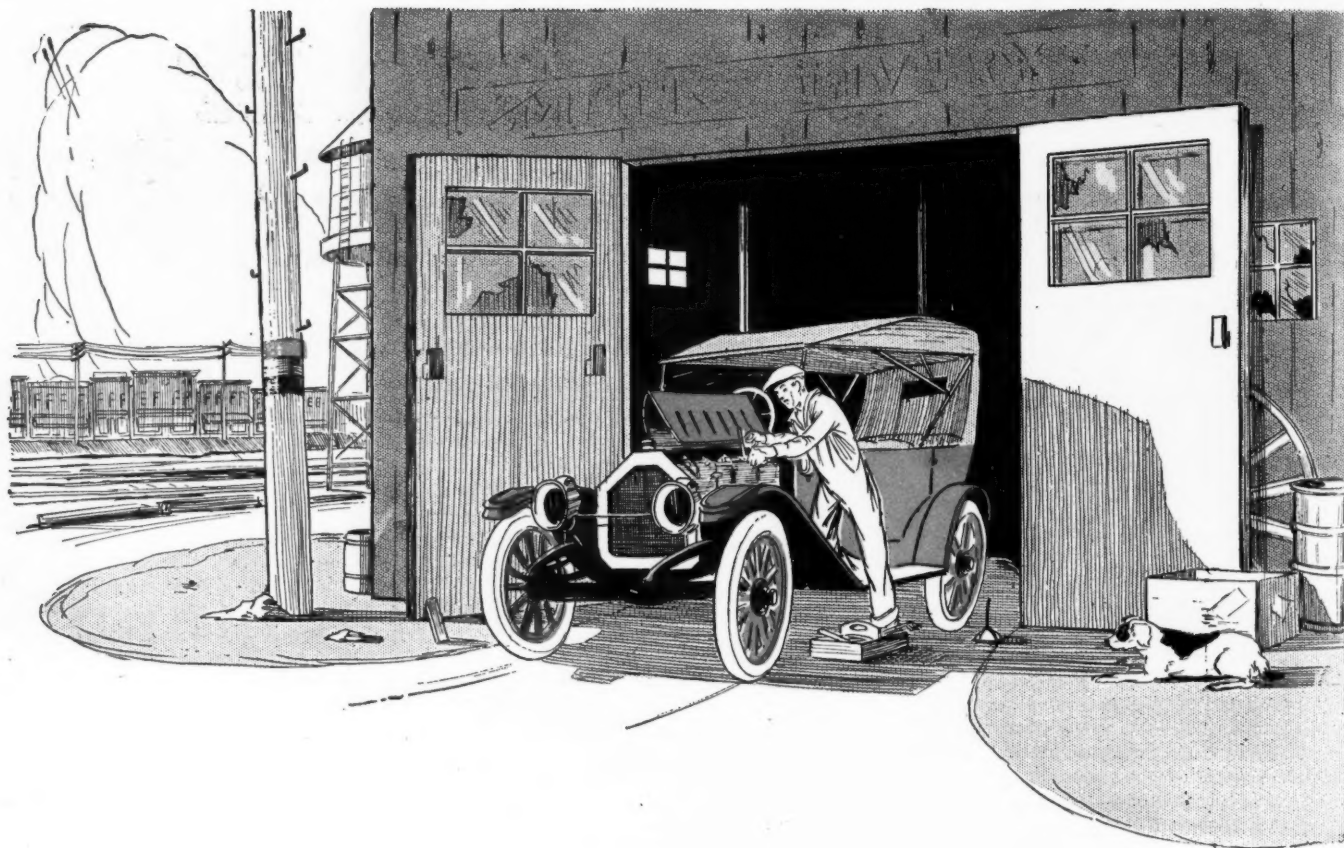
Stewart

CUSTOMBILT ACCESSORIES

USED ON 9 MILLION CARS

STEWART-WARNER SPEEDOMETER CORPORATION - CHICAGO, U. S. A.

"The Line of Least Resistance"



Do You Remember When It Was A Livery Barn?

SOMEWHERE west of the water tank, there was a red-headed, sure-handed mechanic fixing cars in a shack that was an eight-horse livery barn before Overland and Willys-Knight and the other automobiles retired the horse. Folks said Al was born with a Stillson wrench in his hand.

One day Al decided that if he could fix them, he could sell them. He started out to get a line of cars that wouldn't need much fixing, so he could do a lot of selling. He knew that his judgment on a car would go a long way toward convincing his neighbors that it was right. He looked over all of them!

Al left one morning on the 9:15 and that

evening drove back a new Overland Touring. He sold it and another next day before the sign painter finished a rush job of lettering "Overland and Willys-Knight" over Al's door.

Al didn't do that well every day, but he did sell 112 Overlands and Willys-Knights from his converted livery barn in his first twelve months. Al doesn't get grease in his hair any more. And he put some real money in the bank during the year, that was all his.

It wasn't long before Al moved uptown into a new brick garage with a showroom in it and a big red gasoline pump out in front. Al's banker advised him to build it.

Al will tell anyone who is willing to listen that the Willys-Overland franchise is the greatest dealer proposition on four wheels. He'll tell the world that he made a lot of money because the Willys-Overland factory didn't seem to know when to quit helping him sell cars. His banker likes Al personally and has a great deal of respect for his business ability because Al is hooked up with a \$100,000,000 corporation—with a 1924 Financing Plan that makes it possible for fellows with ability like Al's, and a little capital, to make a big success in the automobile business.

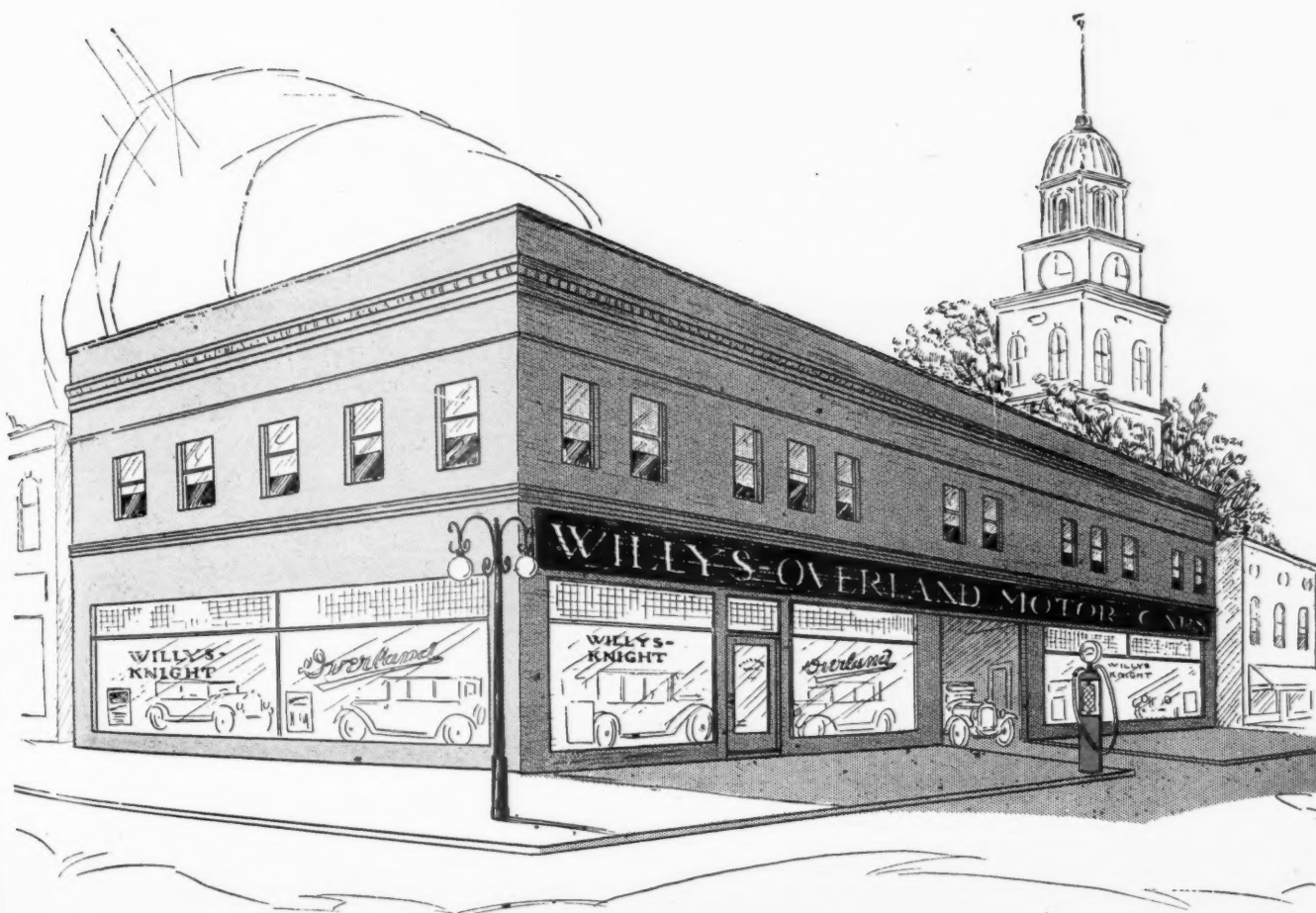
Al gives a lot of credit for his prosperity to the assistance Willys-Overland gives its dealers. He didn't have to worry about what the factory was going to do. They protected him when price cuts came, as

they do all their dealers. They backed him with a big merchandising and advertising program that sent people out west of the water tank to see his cars.

Al also knows, because he was a good mechanic before he became a successful merchant, that he keeps a lot of profit that would otherwise go out in free service keeping owners sweet, simply because Overland and Willys-Knight are so well-built they require the inside minimum of attention.

Al's story and the stories of a lot of other Als are all in the new book of "Evidence." Send for this book and the confidential franchise facts for your vicinity today. Your opportunity with Willys-Overland is as big as Al's.

WILLYS-OVERLAND, Inc., TOLEDO, OHIO
Willys-Overland Sales Co. Ltd., Toronto, Canada



THE *Gray* GROUP for 1924



Prices at Detroit

Touring - - -	\$630
Coupe - - -	750
Sedan - - -	895
Truck Chassis -	595

Straight side cord tires
standard equipment on
passenger cars

More for the Money than the price suggests

- More value for the car buyer
- More profit for the dealer

The finest bodies—in design, materials and coachwork—ever offered on light cars.

Economy and dependability which won for Gray the world's official economy record of 33.8 miles to the gallon of gas on a run from coast to coast.

Dealers declare that with the increased scale of discounts the Gray franchise is the most advantageous in the light-car field.

The outstanding success of the Gray Group at the Automobile Shows furnishes ample proof of the public appreciation of these features. Write today for details of open territory.

GRAY MOTOR CORPORATION
DETROIT, MICHIGAN

THE car comfortably accommodates five passengers. Generously upholstered in attractive striped velour, overstuffed. Appointments are complete, including dome light and robe rail. All side windows may be lowered. Radiator is nickeled. Disc wheels are standard. Body, hood and wheels finished in black, gold striped. Price **\$895** f.o.b. Detroit



When Remington went into the Cash Register business there were two questions that had to be answered.

1. What protection does the merchant need and want today?
2. How can a Cash Register give it to him?

An organization that knows the problems of the merchant as few manufacturers ever get to know them

answered the first.

The liveliest talent in the country was retained to answer the second.

Remington has a century-old reputation for precision and skill in manufacturing fine mechanisms. This experience is embodied in Remington Cash Registers.

The Remington is the *new* and *better* Cash Register. You ought to see it.

Akron, Ohio
Albany, N. Y.
Atlanta, Ga.
Baltimore, Md.
Binghamton, N. Y.
Birmingham, Ala.
Boston, Mass.
Bridgeport, Conn.
Brooklyn, N. Y.
Buffalo, N. Y.
Charlotte, N. C.
Chicago, Ill.
Cincinnati, Ohio
Cleveland, Ohio
Columbus, Ohio
Dallas, Tex.
Davenport, Ia.
Denver, Colo.
Des Moines, Ia.
Detroit, Mich.
E. St. Louis, Ill.

REMINGTON CASH REGISTER CO., Inc.

Factory and General Sales Office, Ilion, N. Y.

Subsidiary of REMINGTON ARMS COMPANY, Inc.

25 Broadway, New York, N. Y.

In Canada: Remington Cash Register Company of Canada, Ltd.
557 Yonge Street, Toronto, Ont., Canada.

Fargo, N. D.
Fort Worth, Tex.
Fresno, Calif.
Grand Rapids, Mich.
Harrisburg, Pa.
Hartford, Conn.
Houston, Tex.
Indianapolis, Ind.
Jacksonville, Fla.
Jersey City, N. J.
Kansas City, Mo.
Lansing, Mich.
Little Rock, Ark.

Los Angeles, Calif.
Louisville, Ky.
Madison, Wis.
Memphis, Tenn.
Miami, Fla.
Milwaukee, Wis.
Minneapolis, Minn.
Nashville, Tenn.
Newark, N. J.
New Orleans, La.
New York City
Oakland, Calif.
Oklahoma City, Okla.

Omaha, Nebr.
Philadelphia, Pa.
Pittsburgh, Pa.
Portland, Me.
Portland, Ore.
Providence, R. I.
Reading, Pa.
Rochester, N. Y.
Sacramento, Calif.
Salt Lake City, Utah
San Antonio, Tex.
San Diego, Calif.
San Francisco, Calif.

Seattle, Wash.
Sioux City, Ia.
Spokane, Wash.
Springfield, Mass.
Springfield, Ohio
St. Louis, Mo.
St. Paul, Minn.
Syracuse, N. Y.
Tacoma, Wash.
Tampa, Fla.
Toledo, Ohio
Trenton, N. J.
Utica, N. Y.
Washington, D. C.
Wheeling, W. Va.
Wichita, Kan.
Wilkes-Barre, Pa.
Wilmington, Del.
Yonkers, N. Y.
Youngstown, Ohio

There is a Remington Cash Register built to fit your business. Get in touch with the Office nearest to you, and you will find our representative there willing and glad to make a complete demonstration.



RieNie FAN BELTS

Their Superior Construction is Your Selling Advantage

The Rie Nie dealer has a decided advantage in making fan belt sales. Instead of merely offering his customers a fan belt, he has only to point out the self-adjustable shape of the Vee Round Belt or perhaps the Special Cover Jacket on the Flat Type, in fact any one of the exclusive Rie Nie Features and his customer quickly realizes that here is an exceptional belt—and best of all it costs not more than the ordinary kind. The result—a quick profitable sale and a well satisfied customer.

The fact that fewer sizes of Rie Nie Belts are required to make up a complete stock has made them favorites with dealers, who realize the advantage of a quicker turnover on a smaller investment.

If you are not now carrying them, it will be well worth your while to ask your jobber about Rie Nie Belts. Most jobbers carry them. If yours does not, write us direct.



Vee Round



Flat Type

DURKEE-ATWOOD Co.
MINNEAPOLIS, U. S. A.

RieNie Automotive Products

All in One
Dressing
Aluminum
Enamel
Battery Paint
Bearing Blue
Clutch and Brake
Compound

Enamel (Air
Drying)
Enamel
(Cylinder)
Fan Belts
Gasket Cement
Graphite

Leather Dressing
Metal Polish and
Nickel Polish
Patch
Pedal Pants
Polish-Auto Body
Radiator Cement
Orange Shellac

Radiator Hose
Rim Paint
Rubber Cement
Shellac (Gasket)
Rubber Filler and
Cement
Spring Lubricant

Tire Mica and
Tire Talc
Tire Paint
Valve Grinding
Compound
Varnish (Clear
Auto)

Reproduction of one of the AC 1075 Ads in The Saturday Evening Post

A good plug for Fords!

AC 1075

Here is why the AC 1075 is a good plug for Fords

Spring Terminal Clip

makes it easy to test plug o. coil while motor is running and locks nut so that it will not unscrew. There is no danger of damaging connection through use of pliers as the clip keeps it tight.

Heavy Body Porcelain

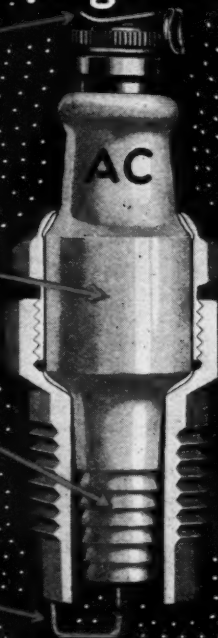
to withstand hard service—plug comes apart by unscrewing bushing.

High Temperature Fins

Plugs become shorted by deposits of carbon. The thin edges of the fins on the patented carbon proof porcelain get hot quickly and burn away the deposits, thus preventing accumulation of carbon.

Heavy Electrode

designed to form natural drain so no oil will lodge in spark gap.



INSTALL A SET OF AC 1075's TODAY—YOUR MOTOR WILL PERFORM BETTER

AC Spark Plug Company, FLINT, Michigan

Makers of AC Spark Plugs—AC Speedometers

U. S. Pat. No. 1,135,727, April 13, 1915; U. S. Pat. No. 1,216,139, Feb. 13, 1917. Other Patents Pending

How the AC 1075 is being advertised in national publications to the Ford owner

Thousands of dealers are building a big, profitable spark plug business among Ford owners on the AC 1075—a better plug for Ford engines—and you make a larger profit on them.

Write us for the attractive fibre poster, *in colors*, of the above advertisement which we have for you—to connect your store with this impressive AC advertising.

AC Spark Plug Company, FLINT, Michigan

Makers of AC Spark Plugs—AC Speedometers

U. S. Pat. No. 1,135,727, April 13, 1915; U. S. Pat. No. 1,216,139, Feb. 13, 1917. Other Patents Pending



A reproduction of No. 13 of the Graham Brothers Series on "American Industries", as published in the Saturday Evening Post of March 15, 1924.

Ice—and Health

Ice is indispensable to America's health.

It protects the lives of babies and revitalizes the nation in times of oppressive heat. It reduces living costs by preserving essential foods in storage.

Without ice, the price of meat, milk and produce would soon become prohibitive.

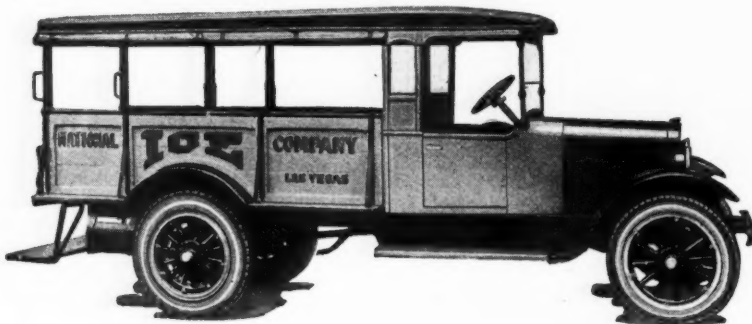
Six thousand ice manufacturing plants, adding 40,000,000 tons of their crystal product to the 13,000,000 tons annually harvested from lakes and rivers, make us independent of the whims of winter. The menace of a shortage no longer exists. Prices are reasonable—and the product as pure as human ingenuity can make it.

Graham Brothers Truck, serving in 343 different lines of business, has a particularly creditable record in the Ice and Cold Storage Business. It has proved to the satisfaction of the most exacting owners that it possesses the attributes they value most—exceptional sturdiness, unfailing dependability and real economy of operation.

1 Ton Chassis, \$1265; 1½ Ton, \$1325; f. o. b. Detroit

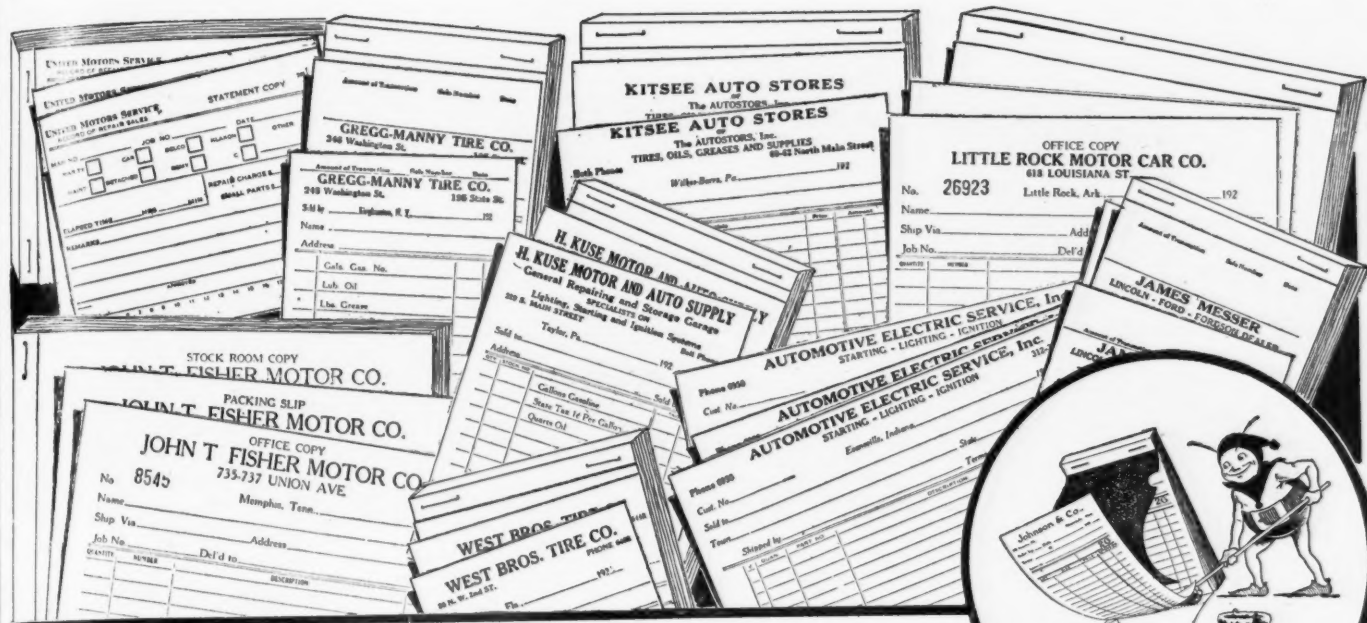
GRAHAM BROTHERS
Detroit

Graham Brothers Standard 1½ ton Truck for Ice Dealers. The body is one of 30 standard types manufactured by Graham Brothers and sold everywhere by Dodge Brothers Dealers.



GRAHAM BROTHERS TRUCKS

SOLD BY DODGE BROTHERS DEALERS EVERYWHERE



Profits Protected

—Since These New Books
Safeguard Every Transaction

Faulty records and carelessness are taking thousands of dollars every year from automobile men. Failure to get charges on the ledger for gas and oil, parts and repairs is too often the cause. To protect against such losses we have for years studied these problems with the automobile dealers, garages, service stations, supply houses and filling stations. Sure-Trip Sales Books have been found to be the solution which provides absolute protection.

Every time one of your men makes a charge sale, he writes it on a Sure-Trip Book. One slip goes to the customer and the other two slips remain in the customer's file until the end of the month. Then one set of slips is

sent to the customer with a list of slip totals—no further itemization is necessary. All charges are insured, labor and time are saved in making out statements. Your bills are sent more promptly and there is no room for dispute. They are also adaptable to many other records — each order being planned and printed for the individual need.

Our salesmen are ever ready to help

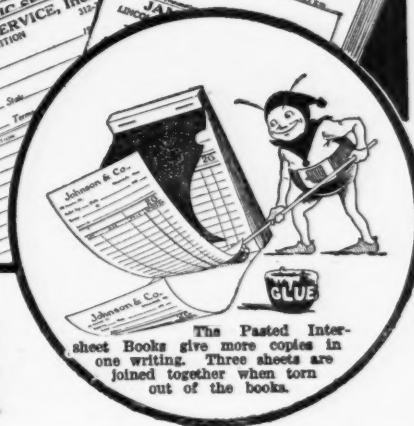
solve your many recording and checking problems. It is quite natural that they should be able to help you materially for long experience has taught them the best methods of the leading automobile dealers, garages, supply

houses, service and filling stations. 44% of these salesmen have been with us for 15 to 38 years; 26% for 10 to 15 years.

Our latest improvements, the Sure-Trip and Sure-Quad Sales Books embody features found nowhere else. They produce more copies in one writing, which are joined together when torn from the book.

Why don't you make use of this knowledge and experience to benefit your own business?

Our whole organization is at your service to solve any of your original entry problems. While you have it in mind, pin the coupon to your letterhead, tell us the uses you are thinking of and send to our nearest plant.

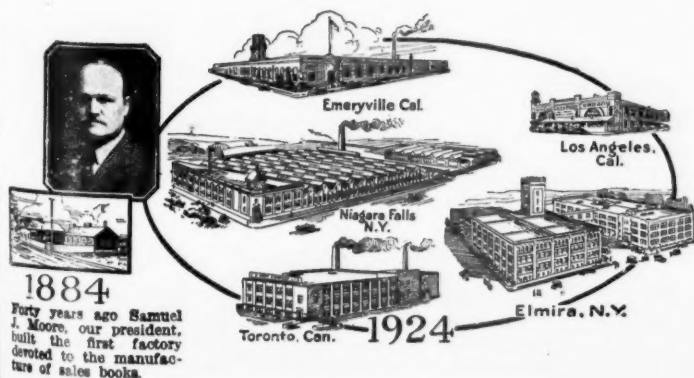


American Sales Book Company, Ltd., Elmira, N. Y.

West of the Rockies
Pacific Manifold Book Co.,
Emeryville, Cal.

Pacific Coast Sales Book Co.,
Los Angeles, Cal.

In Canada
F. N. Burt Company, Ltd.,
Toronto, Can.



American Sales Book Company, Ltd.
Dept. 7283, Elmira, N. Y.

Without incurring obligation, I would like to know more about your Sure-Trip and Sure-Quad Sales Books, as described above, for the following uses _____

Firm _____

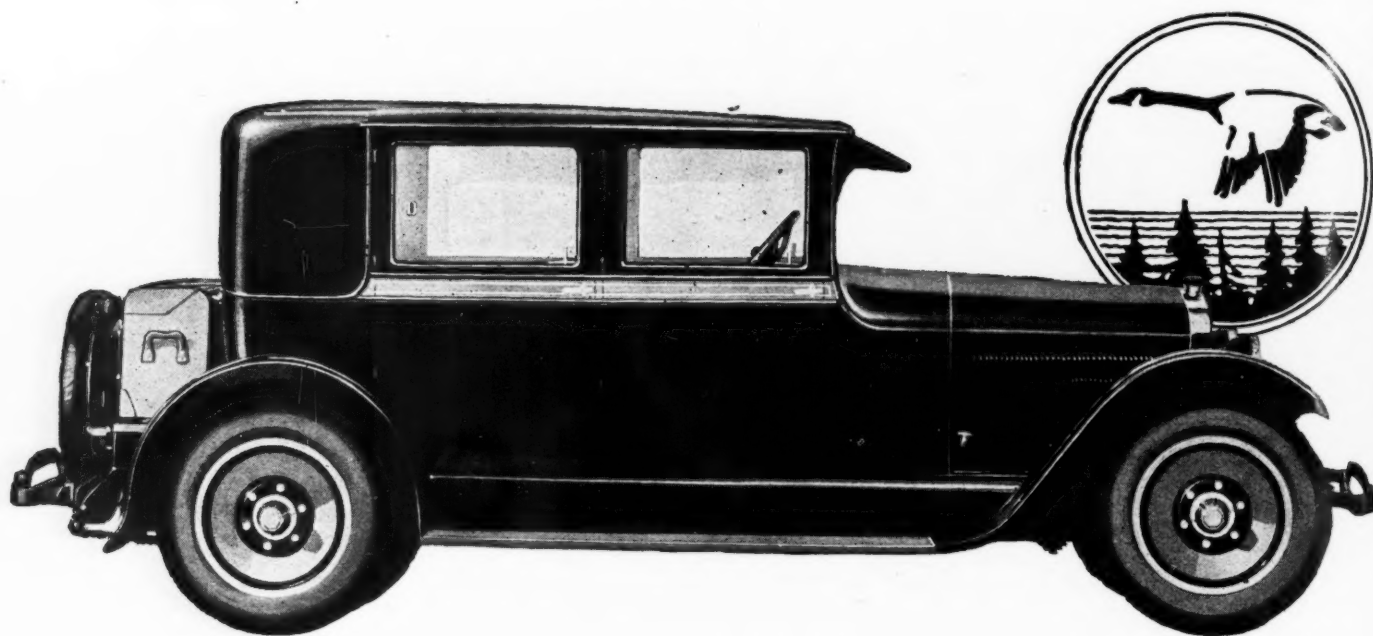
My position _____

Name _____

Address _____

Note: We might be interested in other duplicating forms, such as _____

(see my letter)



"Have You Seen the New Wills Sainte Claire?"

AT THE big National Automobile Shows, the new Wills Sainte Claire models were exhibited for the first time. Never has a motor car been welcomed more enthusiastically by dealers and public alike.

Much was expected of C. Harold Wills, who for more than 20 years has been an outstanding figure in automotive engineering and metallurgy. But even Wills Sainte Claire dealers were not prepared for what they saw. One prominent dealer said, "Never in my eighteen years of experience selling automobiles have I seen motor cars with such little sales resistance as these new models."

He voiced the sentiment of every dealer who saw the new Wills Sainte Claire.

Some of the outstanding features are: A longer wheelbase (127 inches)—hydraulic four-wheel brakes (under Lockheed patents)—balanced balloon tires—refinements in the marvelous Wills Sainte Claire 8-cylinder, V-type engine—Mo-lyb-den-um steel, most enduring of all materials—bodies so distinctive that everyone assumes them to be custom-built.

In this distinguished line of motor cars, dealers are offered a genuine opportunity. Increased production permits the appointment of dealers in cities and towns where Wills Sainte Claire is not now represented.

Write for complete details

WILLS SAINTE CLAIRE, INC.

500 E. Jefferson Avenue
DETROIT

Factory at Marysville
MICHIGAN

Here's Proof!

The best test of a drill is to put it up against a variety of jobs under all kinds of conditions. If it "stands the gaff," it has quality. The comments on this page furnish convincing proof of the quality of TEMCO Drills as shown by the service they give.

"Runs Three Hours on Heavy Duty Work"

"We use your Model 'K' Drill every day in our truck service station, doing all kinds of drilling operations, also in running a re boring tool. This necessitates running Drill under very heavy duty about three hours at a time, but it has given most satisfactory service."
Richardson Motor Sales Co.
Memphis, Tenn.

"Drills Through Toughest Steel"

"We use your Model 'N' Drill every day, putting on our hitch, have to drill our holes in the frame of every car in which our trailers are hitched and some of them are made in the hardest steel made. The Drill has been perfectly satisfactory to us."
Chenango Equipment Mfg. Co., Norwich, N. Y.

"Slap It Against Anything and Go Ahead"

"Since installing your Model 'K' TEMCO Drill we have put it to several very rigid tests and it has done all and a little more than it was represented to do. As for the various kinds of work for it, just slap it against most anything and go ahead. We are more than satisfied with this tool."
Lynchburg Machine Works,
Lynchburg, Va.



Length,
17 in.;
weight,
16 lbs.;
speed,
650 R. P. M.;
any voltage
to 250 volts

The New
TEMCO
Model G-D

Half-Inch
Garage Drill
Price \$56.00

Specially designed for lapping pistons, honing cylinders, grinding valves, installing accessories, and all sorts of repair work, such as drilling, reaming, tapping, boring, etc., on any of the hundred-and-one jobs around garages and repair shops.

Has wide-face, oil-hardened gears; fan-cooled motor; Norma ball bearings; quick-break switch; combination grip handle and breast plate, and two side handles for heavy work. Furnished complete with three-jaw geared chuck and 15 ft. of finest non-kinkable cord and plug.

ASK YOUR JOBBER for complete information on TEMCO Tools, or write us direct giving Jobber's name.

The Temco Electric Motor Co.
703 Sugar St. Leipsic, Ohio

Western Sales Representatives

ALLIED INDUSTRIES, INC.

455 Second St.,
San Francisco, Calif.
1256 Factory Place,
Los Angeles, Calif.

1252 First Ave., So.,
Seattle, Wash.
53 Fourth St.
Portland, Ore.



Combination
Bench and
Post Drilling
Stand

Takes Models "GD", "J", "K", "N", and "T" Temco Drills without need of extra attachments. Extra bracket furnished for attaching to vertical column or side wall. Sturdily built to withstand hard service. Price, only \$26.00.

TEMCO **Portable Electric Tools**
Drills-Grinders-Drilling Stands

Been
Making
Them
Since
1910

THE POST will

A Remarkable New Tire Pump



**TRADE
MARK.**

Here is a tire pump that does what a pump *ought* to do! The Aryin Tire Pump relieves those inevitable and dreaded moments when a flat tire has needlessly sacrificed your time, comfort and temper—all for the lack of a pump that would do what it *should*.

Arvin sets a new standard in pump design and efficiency. Bigger than you'll probably expect—and more powerful. **The king of pumps**—a veritable air-station! Makes a mere incident of tire-inflation and quickly sends you on your way, rejoicing!

You can't *prevent* these emergencies—but you can be *ready* for them with this big, new Arvin. When you need air, you need it on the spot—and you want it “quick and easy.” That's Arvin!

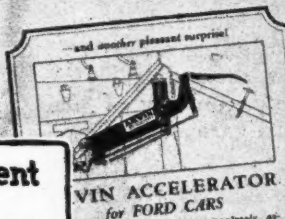
Arvin agrees to serve you with new ease, comfort and dispatch for 5 long years, at less than 7 cents a month. Always ready, *when* you need it and *where* you need it! Take an Arvin away from your dealer today. Be protected!

INDIANAPOLIS PUMP & TUBE CO.

Factory and Office at Greenwood
INDIANAPOLIS, INDIANA

ARVIN

Tire Pump



Acrid Accelerator comes completely assembled. You can install it easily and quickly. No need to interfere in any way with removal of floor or floor covering of the car. The accelerator is designed to give proper leverage to work easily and feel smooth and consistent. One style fits all cars. A sturdy product. Call for instructions for installing.

At All Dealers

Here Is a Pump!

- 1 Big, comfortable handle with easy, positive grip.
- 2 Barrel "thigh-high" saving improvement.
- 3 Thirty-inch barrel with valve at end.
- 4 Sturdy head.

Traditionally
for five years.

At All Dealers, \$4

Slightly higher west of T
in Canada

...EATER for
...land Dodge Mex...



**substantial foot-grip
assures steadiness
while pumping**

push this pump!



the Arvin Tire Pump is
unconditionally guaranteed
for five years of service



big, comfortable
handle—easy
to grip

barrel "thigh-high"
—a back-saving
improvement



ARVIN
TIRE PUMP

thirty-inch hose
reaches tire valve
at any position



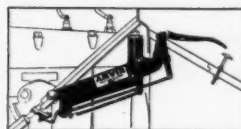
THE big Arvin Tire Pump and the big Arvin advertising campaign—the happiest combination for profit you could possibly imagine.

Here's the Saturday Evening Post page—April 5—that starts the ball rolling. Other advertisements follow regularly. Cash in with Arvin—order from your jobber now!

Retail Price \$4.00
West of Denver, \$4.50 In Canada, \$6.00

ARVIN

Tire Pump



ARVIN ACCELERATOR

For all Ford cars. Does not come through foot-board. Packed *completely assembled* in carton, ready to install. Installations unusually simple. Retail . . . \$1.75

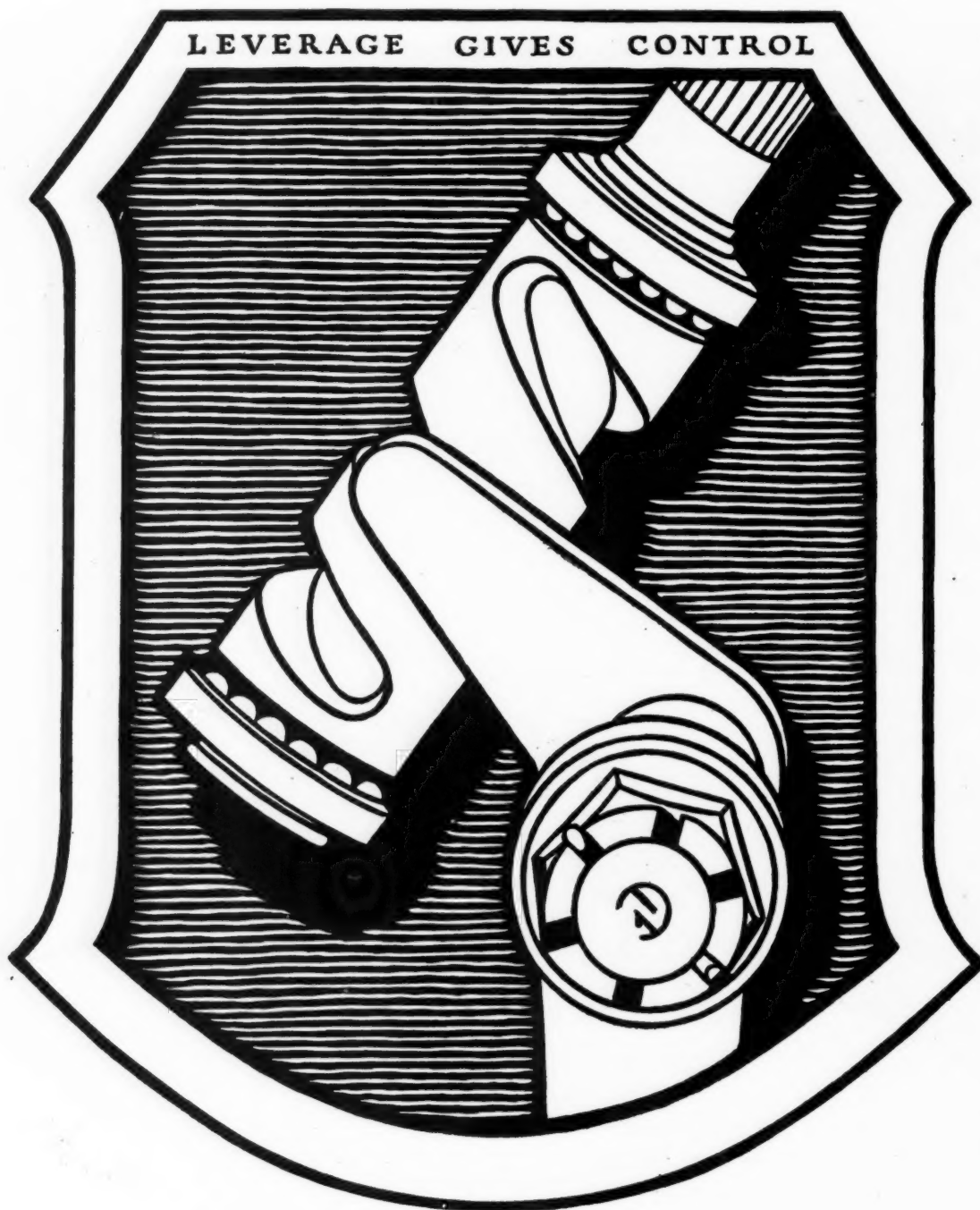
ARVIN HEATER

ARVIN COWL VENTILATOR

also

Indianapolis No. 11 Tire Pump
Indianapolis No. 12 Tire Pump
Indianapolis No. 14 Tire Pump
Indianapolis No. 20 Tire Pump


INDIANAPOLIS
PUMP & TUBE CO.
INDIANAPOLIS
Factory and Office
at Greenwood



PROGRESS IS INEVITABLE

New standards of ease and certainty have been reached in the *starting* and *stopping* of motor vehicles. Ross now does as much for *steering*.

Ross Gear & Tool Co., 400 Heath St., Lafayette, Ind.

ROSS
CAM and LEVER  **STEERING GEARS**
EASIER STEERING **LESS ROAD SHOCK**

Growing Profits in

OFF'N'ON CHAINS

There will be a growing use of OFF'N'ON Chains
for these two reasons:

The Positive Lock

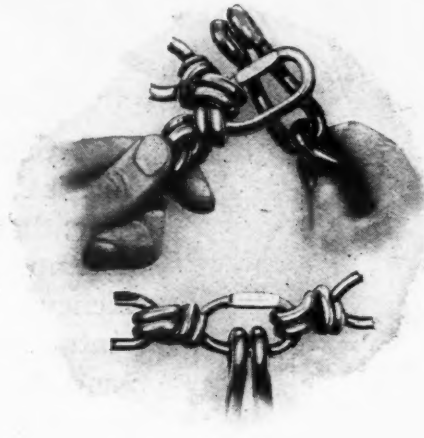
This patented lever lock makes it easy to put them on and to take them off. It takes up slack; thus saves wear on tires and chains alike. No more lost chains—no more loose chains.



The Slip-On Link

This patented slip-on link makes it easy to take off the old cross chain and put on a new one.

A child can do it. Yet they cost no more.



The growing use of these chains means that profits to dealers will multiply.

Get in on this profit maker now. Order today from your jobber. Buy spare cross chains because you can sell a set of extra cross links with every chain.

Write us for circular and price list, giving the name of your jobber

PYRENE MANUFACTURING COMPANY

Makers of Pyrene Fire Extinguishers

520 Belmont Ave., Newark, N. J.

Branches: CHICAGO—17 So. Jefferson Street
ATLANTA—164 Spring St.

KANSAS CITY—2010 Grand Avenue
SAN FRANCISCO—977 Mission Street

The Biggest Name In The Bumper Field



The motorist cannot see the difference between plain carbon steel and scientifically tempered spring steel; he cannot detect the hurriedly-put-on finish of the common bumper; he may not appreciate the value of extra thickness of material and full-loop ends on certain designs of Gemco Bumpers.

After a collision has bent the bumper and the impact damaged the car, after the finish begins to chip off, or rust, then he will begin to have unfriendly thoughts towards the dealer who failed to coach him in bumper quality.

Gemco BUMPERS

Explain
To Your
Customer

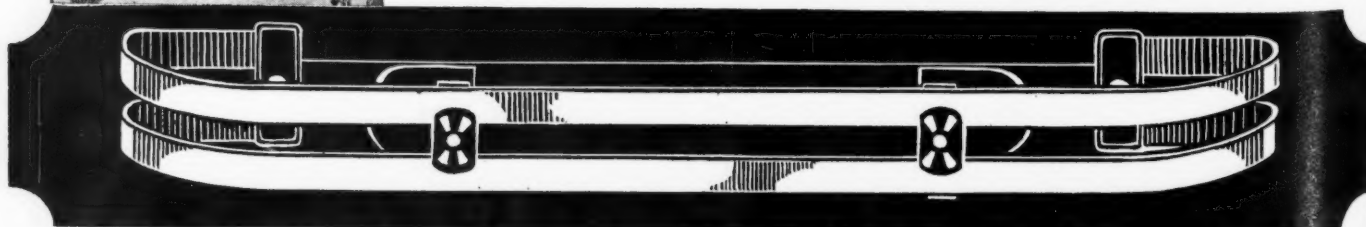
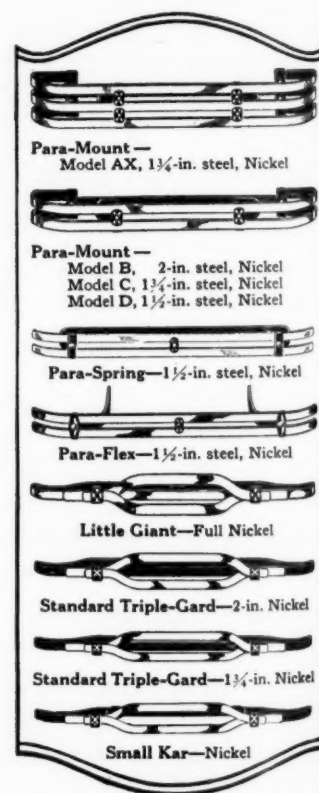
That Gemco Bumpers are made by America's oldest bumper manufacturer; that the Gemco special process of tempering steel gives greater resiliency; that fourteen different treatments are given to secure a permanently beautiful finish; that they are scientifically shaped, braced and clamped; that the connections do not loosen or rattle.

Ask your jobber or write us for interesting dealer proposition and new catalog No. 31, showing designs and attachments for all cars.



Gemco Mfg. Co.

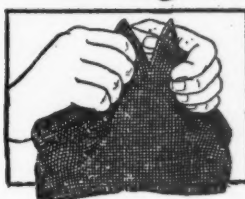
760 So. Pierce St., Milwaukee, Wis.



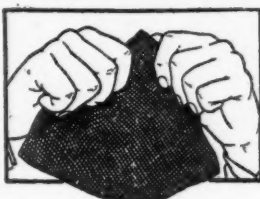
GATES BELTS

"The Standardized Fan Belt"

Try this test



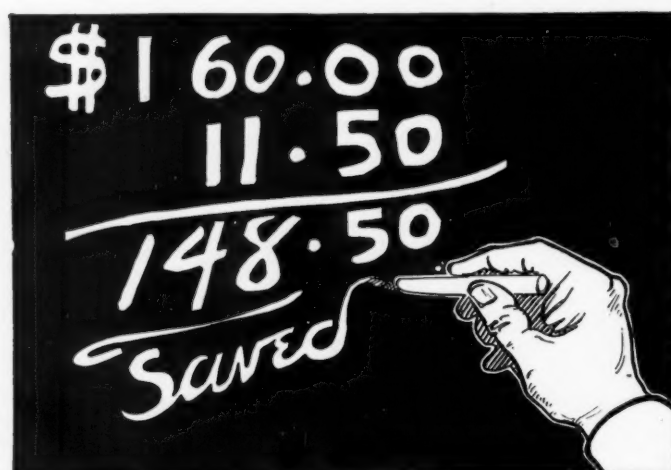
Take a piece of light fabric that you can tear easily in this manner—that is, straight across. Then try to tear it diagonally as in the next picture.



You find that it has double strength on the bias—a good illustration of the extra strength and durability of the bias weave construction.

It's easy to show your customers why there's double durability in Gates Vulco Belts—and it's a convincing proof, too.

Made by the World's Largest Manufacturers of Fan Belts.



In addition to this initial saving there's a continuous saving of time lost hunting for tools, temper and customer's good will.

Figure it yourself

The cost of the equivalent to the H & G Wrench Set in single-purpose tools is \$160.00.

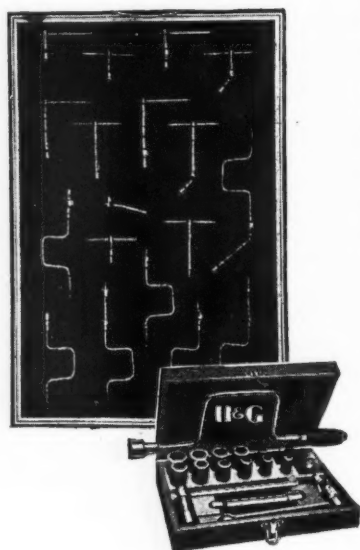
The cost of an H & G set with which you may make all needed combinations is but \$11.50.

Is \$148.50 worth saving?

With the H & G Wrench Set you can instantly make over 140 different combinations—every type and size wrench that a mechanic would get together in a lifetime.

You just put the parts together and you have the strongest wrench of the kind ever made. Each combination has the feel of a one-piece tool. Guaranteed not to slip, break or whip.

Endorsed by leading car manufacturers and thousands of progressive mechanics. Invaluable to service stations and repair shops. Price, complete with Speed Handle, \$11.50. Order through your jobber.



The Eastern Machine Screw Corporation
 10-20 Barclay St., New Haven, Conn.

In Canada: The Canadian Raybestos Co., Ltd., Peterborough, Ontario

The **H & G**
140 Wrench Set

Our
FREE BOOK
tells all about the
Hall Method of Honing

Write for it
TODAY

Honing
on the
chassis



We have prepared a book, "The Scientific Application of Hall's Cylinder Hone", which we will send to you upon request. It fully explains the Hall Cylinder Hone and how it is used to restore all types of worn cylinders to a true cylindrical round with a hard polished surface.

The Hall Cylinder Hone has been proven a big money maker for the repairman. It has enlarged his scope of work and made it possible for him to handle complete reconditioning jobs by honing the cylinders himself instead of sending the bloc to the grinder and having the laid up car occupy his floor.

It goes right to the job and does it. It's quicker, better for the motor, and satisfying to the customer. And—get this—it puts profits into your pocket, even within the flat rate.

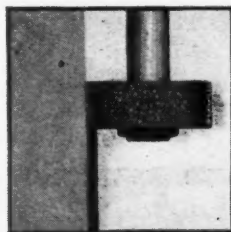
Send for your free copy today.

The Hall Cylinder Hone Company

435 Dorr St.

Toledo, Ohio

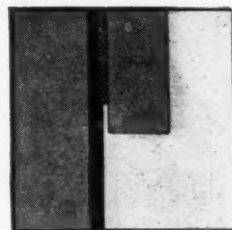
In Canada: Hall Gear & Machine Co., Toronto, Ontario



The usual grinding or re-boring job removes the seasoned or hardened surface of the cylinder wall which only extends to a depth of .003. If this valuable metal is removed, a fresh loose grain texture is exposed and this is subject to rapid wear.

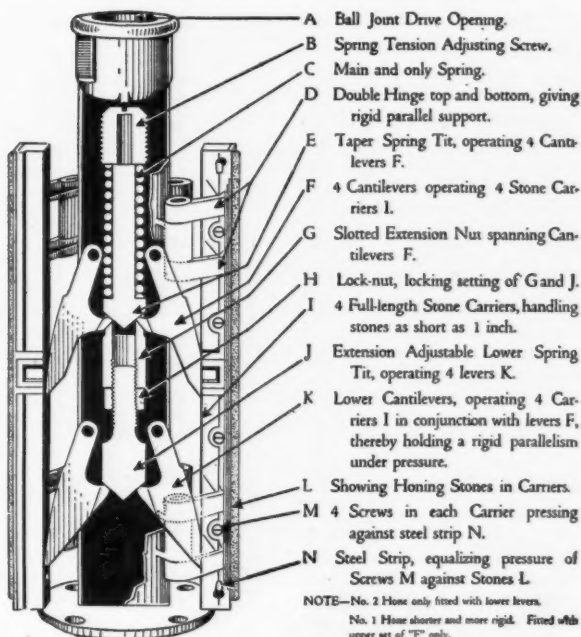
Honing by the Hall Method restores a true cylindrical round and parallel sides with a smooth and highly polished surface.

The stone carriers may be fitted with hickory blocks and short stones for working off ridges or acute tapers. The full length stones may be saved for finishing.



Parallel Expansion of Stones

The expansion in the Hall Hone is controlled by one spring in the center of hone body. Each stone receives an equal pressure to an equal distance. Each stone is rigidly hinged at top and bottom to prevent tipping or following a tapered cylinder. By soaking stones in kerosene all cuttings remain on the stones in the form of paste and do not drop into the motor bearings.

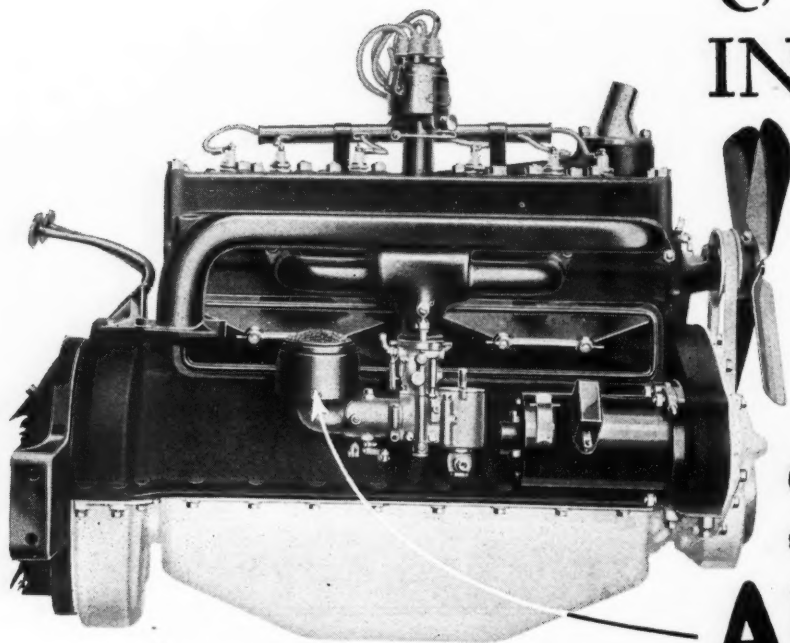


- A Ball Joint Drive Opening.
- B Spring Tension Adjusting Screw.
- C Main and only Spring.
- D Double Hinge top and bottom, giving rigid parallel support.
- E Taper Spring Tit, operating 4 Cantilevers F.
- F 4 Cantilevers operating 4 Stone Carriers I.
- G Slotted Extension Nut spanning Cantilevers F.
- H Lock-nut, locking setting of Gand J.
- I 4 Full-length Stone Carriers, handling stones as short as 1 inch.
- J Extension Adjustable Lower Spring Tit, operating 4 levers K.
- K Lower Cantilevers, operating 4 Carriers I in conjunction with levers F, thereby holding a rigid parallelism under pressure.
- L Showing Honing Stones in Carriers.
- M 4 Screws in each Carrier pressing against steel strip N.
- N Steel Strip, equalizing pressure of Screws M against Stones L.

NOTE—No. 2 Hone only fitted with lower levers.
No. 1 Hone shorter and more rigid. Fitted with upper set of "F" only.

the seasoned metal is but skin deep—don't waste it

The SIMPLE INSTALLATION



The UNITED AIR CLEANER

DUSTLESS AIR TO THE MOTOR

Its Value to the Dealer—

This is particularly addressed to the new car dealer although it has a news value to automotive parts and supply dealers.

The success of the car dealer depends upon the performance of each and every car he sells.

If your cars please the buyer this year he will be with you when he wants a new car. Also, and equally as important, his word to his friends on how his car performs, means your success or failure.

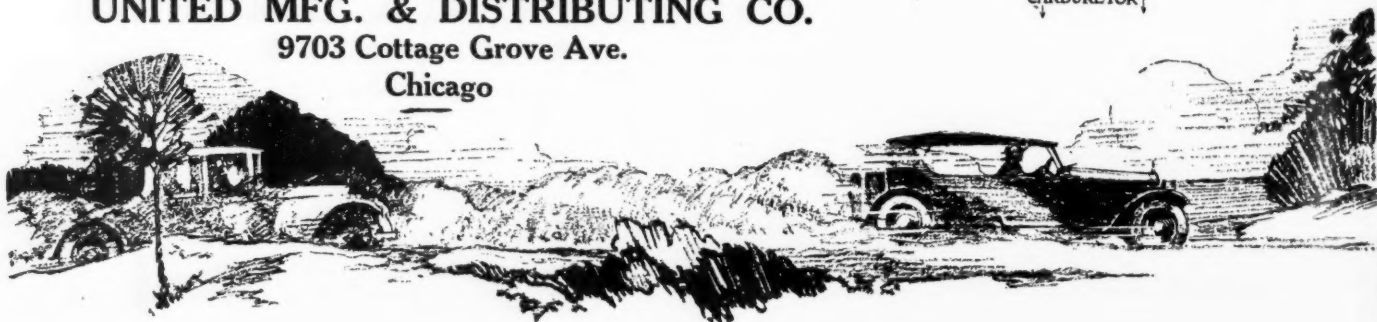
If you study the "Road Dust" problem you will find that it is responsible for 80 to 95% of the carbon. Dust is inhaled into the engine at the carburetor. Dust contains powerful abrasives which grind with all the oil thru bearings, between piston and cylinder, etc.

By the simple process of selling the customer The United Air Cleaner and installing it on his car before he drives away, you insure against the ills that kill customers.

UNITED MFG. & DISTRIBUTING CO.
9703 Cottage Grove Ave.
Chicago

Chrysler, Elgin, Franklin have it. 82 other motors have it. Don't wait for your line to add it. Do it yourself for it will win sales for you.

Easily installed. Weighs only 18 ounces. Measures 4 in. by 4 1/4 in.



SELL THE ONLY RING WITH A MILEAGE GUARANTEE



A Message to Dealers and Repairmen!

**Guaranteed
1000 miles
to the
Gallon of Oil**

Have *you* ever stopped to realize what a huge market Sav-Oil Rings open up for you—by enabling you to tell your prospective customers,

“Here’s the *positive, proven, guaranteed*, remedy to cut down your oil costs and stop the oil pumping which causes most of your motor troubles! Sav-Oil rings **GUARANTEE** at least 1000 miles to the gallon of oil.”

It means increased customer confidence and satisfaction! Send to our nearest distributor today for an assortment of sizes. Increased sales and profits will be sure to follow.

*There is no price cutting competition with Sav-Oil Rings.
Each genuine one is sold at the regular list price.*

Territories Open for Distributors

The Sav-Oil Ring Mfg. Co.

1037 So. Figueroa St.

Los Angeles

Sav-Oil Piston Ring Co.
2056 Jackson Blvd.
Chicago, Illinois

Sav-Oil Ring Mfg. Co.
550 Golden Gate Ave.
San Francisco, Cal.

H. C. Alexandria
612 W. Seventh St.
Little Rock, Ark.

H. W. Blevins
1532 Grand Ave.
Kansas City, Mo.

C. H. Mountjoy & Co.
211 Third Street
San Antonio, Texas



DUESENBERG MOTOR FOR SALE
 Straight Eight Duesenberg motor complete
 in good condition. Fine motor for track
 racing. Price \$350.00.
CHAS. P. HANLEY
 Muscatine, Iowa

This one-inch Advertisement appeared in Motor Age, January 31st. Cost \$7.25. "The motor was sold the next day."

"Deluged with telegrams!"

—writes Mr. Hanley, whose Spotlight advertisement is shown above—

"Ever since the magazine came out with my ad our office has been deluged with telegrams. The motor was sold the next day, due entirely to the ad and could have been sold half a dozen times after that."

* * * * *

Spotlight Advertising does bring results!

Use Spotlight to dispose of your surplus equipment—to hire a reliable employee or find a better job—to get work for idle equipment—to buy machinery you need or to dispose of machinery you no longer need. Undisplayed advertisements, 6c a word.

Consult the Spotlight Department — Advertise in the Spotlight Department—Watch the Spotlight Department Grow!

The
SPOTLIGHT
DEPARTMENT
 THE CLASS JOURNAL COMPANY

*Motor World, Motor Age, Automotive Industries,
 Motor Transport, Distribution & Warehousing,
 El Automovil Americano*

for Economical Transportation



The Car The People Want

We cannot make people buy Chevrolets but the people have been crowding us for three years, making us produce more and more of the cars they want.

In 1922 we built more than 200% more Chevrolets than in 1921.

In 1923 we built nearly 100% more Chevrolets than in 1922.

In 1924 we will built nearly 100% more than in 1923 or more than ten times what we built in 1921.

What other automobile or other high value commodity has ever equalled this record of public acceptance?

Small wonder that the Chevrolet franchise is recognized as possessing the greatest profit possibilities for dealers able to move as fast as the product is moving.

It is because some otherwise good men cannot "make the grade" that A-1 opportunities frequently appear for A-1 merchandisers.

Chevrolet Motor Company, Detroit, Michigan

Division of General Motors Corporation

In Canada—Chevrolet Motor Company of Canada, Limited, Oshawa, Ontario

Chevrolet Dealers and Service Stations everywhere. Applications will be considered from high-grade men only, for territory not adequately covered.

Prices f. o. b. Flint, Mich.

Superior Roadster	- - -	\$490	Superior Sedan	- - -	\$795
Superior Touring	- - -	495	Superior Commercial Chassis	- - -	395
Superior Utility Coupe	- - -	640	Superior Light Delivery	- - -	495
Superior 4-Passenger Coupe	- - -	725	Utility Express Truck Chassis	- - -	550

Fisher Bodies on all Closed Models

When the Motorist Goes Shopping

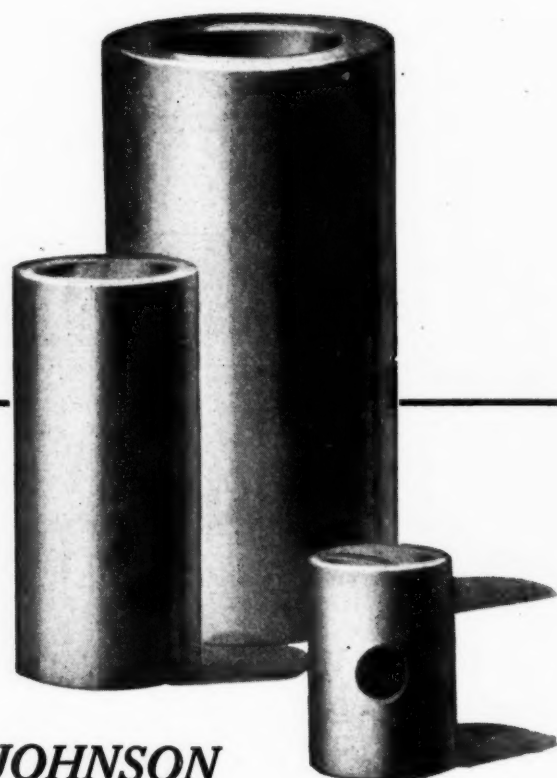
When the motorist goes shopping he does most of his buying at the gasoline pump. Once at the pump he not only buys gasoline and oil, but many accessories that are called to his attention by the wide-awake dealer.

Thousands of motorists are shopping every day at Gilbert and Barker gasoline pumps all over the country. These pumps are used by dealers and patronized by motorists because they give fast service, are safe in operation and continually accurate in measurement.

One of these Gilbert and Barker pumps at your curb will advertise your business. It will introduce you to more customers and bring faster turnover and bigger profits from your accessory stocks.

Get prices and information on one of these Gilbert and Barker gasoline pumps from your oil man. In case he cannot supply it just write us direct, mentioning his name and address.

GILBERT AND BARKER
MANUFACTURING COMPANY
PUMPS AND TANKS FOR THE OIL TRADE
SPRINGFIELD, MASS., U.S.A.



JOHNSON
STANDARD
QUALITY

Bronze BUSHINGS

LEADING jobbers can supply you, from stock, with Johnson Standard Quality Piston Pin, Connecting Rod, Steering Knuckle, Spring Shackle and Generator Bushings for any make of motor car or truck.

Car owners prefer Johnson Bushings because they are standard factory equipment for many of the finest makes of pleasure and commercial vehicles.

Dealers prefer them because they are reputable products, boxed and marked for convenient handling.

JOHNSON BRONZE COMPANY
New Castle, Pa.

See Price List in Chilton Yellow Directory

JOHNSON BUSHINGS

Build Up Your Business *With* **MonaMobile**

OILS & GREASES

"Ever Since the Birth of the Industry"

Sooner or later quality tells. And your customers aren't long in finding that there's real honest quality in MonaMobile lubricants. They find that MonaMobile Oils (the result of 30 years' experience of lubricating experts) have the body that "stands up" under motor heat long after other oils "break" and lose their lubricating value. All MonaMobile Greases are also made to conform to this high quality standard.

These are some of the reasons why you can build up your business—get lots of sales and profits—by taking on the MonaMobile line. You'll be interested in the MonaMobile "silent salesman" shown on this page. You don't have to buy it—we lend it to you! A complete stock of quality lubricants that sell on sight.

A Money-Making Proposition For You!

We have a proposition that can not fail to interest garage, battery, tire and repair shop owners. It's a money-maker from start to finish—one you'll be glad to know about. Get it now! Just mail us a post card.

MONARCH MFG. CO.

Council Bluffs, Iowa
Toledo, Ohio

Pacific Coast Division:—

MonaMobile Oil Co.
San Francisco Los Angeles





One dozen of each FREE

Limited Special Offer!

How this largest patch advertising campaign ever launched will help dealers who display the goods

There are ten reasons why a dealer should buy:

1. The patch is made of a special material which is guaranteed to last.
2. The patch is made of a special material which is guaranteed to last.
3. The patch is made of a special material which is guaranteed to last.
4. The patch is made of a special material which is guaranteed to last.
5. The patch is made of a special material which is guaranteed to last.
6. The patch is made of a special material which is guaranteed to last.
7. The patch is made of a special material which is guaranteed to last.
8. The patch is made of a special material which is guaranteed to last.
9. The patch is made of a special material which is guaranteed to last.
10. The patch is made of a special material which is guaranteed to last.

Las-Stik Tube Patch

Many re-orders for the jobber, many turnovers and many profits for the dealer is the result of handling Las-Stik Tube Patch exclusively. It builds volume.

Las-Stik repeats to the motorist because it makes the permanently satisfactory repair claimed for it.

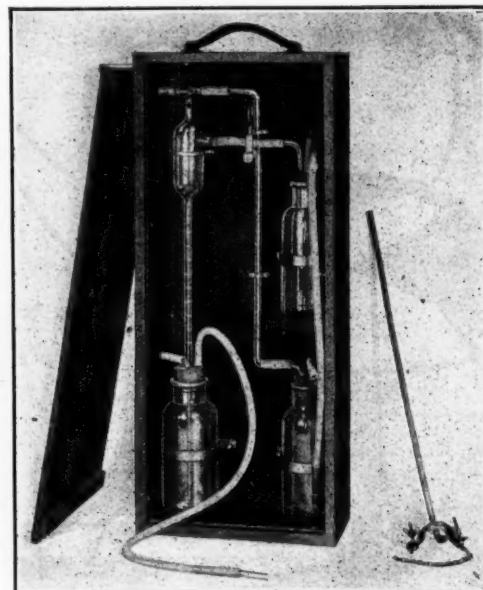
It repeats to the dealer because he finds the national advertising sends new and old customers up to his counter demanding Las-Stik.

It repeats to the dealer because he also likes the frequent circulars sent from Hamilton that offer him practical display suggestions and merchandising ideas that help him turn his stock many times a year at a profit.

If you are not selling tube patch in volume write us.

THE LAS-STIK PATCH MFG. CO.
Hamilton, Ohio

Las-Stik
TUBE PATCH
—the ORIGINAL Patch with a S-t-r-e-t-c-h



25% Increase in mileage!

Remarkable money making possibilities are opened to every Dealer, Garage and Service Station in the Industry through an apparatus developed by the U. S. Bureau of Mines.

This apparatus is known as the F-J Quick Gas Analyzer, which tests, quickly and in a most simple manner, the amount of carbon dioxide gas contained in the exhaust.

From this test, the carburetor is adjusted to provide for a mixture which produces a nearly complete explosion.

The result, from tests made over a period of two years, showed a saving in gasoline consumption of 20% in some cases and a mileage increase of 25% in others.

You can make big profits by rendering a special Gas Saving and Mileage Increase Service to every car and truck owner in your territory.

The opportunity is a great one.

But you must know more about this wonderful device. Write for complete details at once.

The price—\$37.50 complete—can be easily earned in short time by making a service charge of \$1 to \$2 per car, and it's worth it.

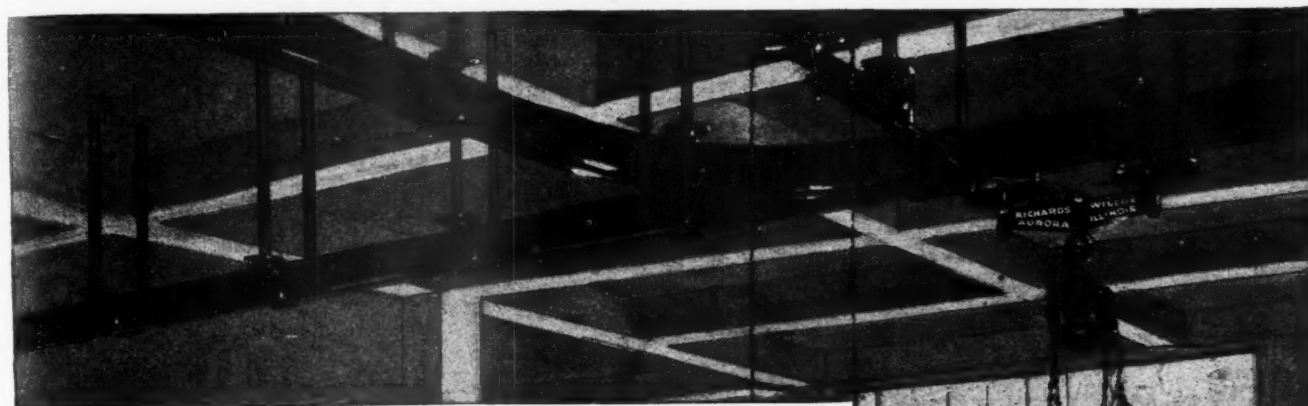
It is extremely simple—highly efficient—and very profitable to own.

Write today without fail.

BURRELL TECHNICAL SUPPLY CO.
PITTSBURGH, PA.

Jobbers and Distributors: There is a liberal discount for you

F-J QUICK GAS ANALYZER



Let this Ceiling Railroad slash your handling costs

By providing a speedier and less costly means of moving heavy loads, Over-Way Conveying Equipment makes heretofore wasted ceiling space as valuable as floor space. It hurries up production, economizes on storage space by permitting higher piling, and multiplies man power by enabling one man to do the work of six.



Conveying Equipment

can undoubtedly be put to many helpful uses in your garage or service station. The cost is of course incidental, for no Over-Way installation has ever yet failed to repeatedly pay for itself. In fact, it is not at all uncommon for an Over-Way installation to repay its cost the first year.

Free Engineering Service to Garage Owners

Our Engineering Department will gladly tell you how Over-Way can be adapted to your particular requirements, and submit complete plans, specifications and estimated savings. This service is given without cost or obligation to any garage owner who earnestly desires to modernize his shop. Write for details of this free service and a copy of Catalog X-23.



Economically Moves—

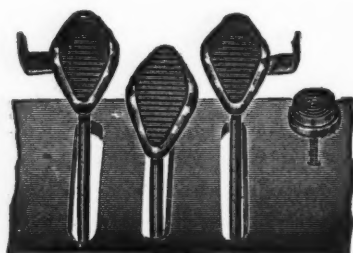
Axles	Lead
Bags	Lumber
Bales	Machinery
Barrels	Metal in Pigs
Bodies	Molten Metal
Bushings	Motors
Castings	Moulding Sand
Cement Blocks	Moulds
Chassis	Nails
Coal	Nuts
Crucibles	Oils
Drums	Paint
Forgings	Patterns
Hardware	Pipe
Heavy Timbers	Radiators
Hose	Shafting
Ingots	Sheet Metal
Iron Bars	Structural Steel
Jacks	Tanks
Kegs	Wheels
Ladles	Wire

New York
Boston
Philadelphia
Cleveland
Cincinnati
Indianapolis
St. Louis

Richards-Wilcox Mfg. Co.
A Hanger for any Door that Slides
AURORA, ILLINOIS, U.S.A.

RICHARDS-WILCOX CANADIAN CO., LTD.
Winnipeg LONDON, ONT. Montreal

Chicago
Minneapolis
Omaha
Kansas City
Los Angeles
San Francisco
Seattle



The New "D" Hook
for Ford Cars
\$1.00 per set

Gets the Money

This complete line comprised of 12 sizes of "Perfection" Pedal Pads is a combination that gets the money.

You have a condensed stock—popularly priced—which turns over quickly because from it you can outfit any car made during this and the past SEVEN years.

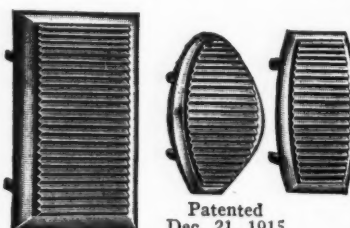
Realizing the profit in such a combination of well made, attractive pedal pads, the trade gladly accepted the line from the first week of its introduction.

Perfection Pedal Pads include a line so complete that you can supply every demand with only 12 sizes. There are Accelerator Extension Pedals—that bring the accelerator nearer the foot in any position—Extension Pedals which are adjustable to suit the varying foot and leg lengths of individual drivers—Special pads for Fords equipped with our Safety Hook—and individual pads for every make of car aside from those included with our Display Board.

"Perfection Pedal Pads" at your jobber's—all the time.



Our New Accelerator Extension. Fits all cars. Gives ease and comfort. \$1.00.



Patented
Dec. 21, 1915



The Display Board

Every make of car is provided for in these pads that sell for only 50c a piece. On your counter this display board sells the goods. It nets you \$6.00 retail. Your discount is a liberal one.

Manufactured by

AUTO PEDAL PAD COMPANY, Incorporated
318-320 West 52nd St., New York City

"Perfection" Pedal Pads are known throughout the Trade. Satisfaction guaranteed to Dealers and Car Owners

"PERFECTION" PEDAL PADS

INSIST ON THE PAD WITH THE NICKEL FRAME

Selling trucks and buses is easier when you know the owner's viewpoint

Read Motor Transport

It tells you the problems of the Fleet Owner. It tells you how Fleet Owners are making and can make a success of truck or bus operation.

Just as *Motor Age* tells you how to handle your business, so *Motor Transport* tells how to efficiently operate fleets of motor trucks and buses.

Reading *Motor Transport* will make you a better dealer.

Recommend fleet owners to whom you have sold trucks or buses to subscribe for *Motor Transport*. This magazine will make them more efficient operators.

You will both benefit!

Motor Transport is published semi-monthly, on the 1st and 15th. The subscription price is \$2.00 per year (\$2.50 West of the Mississippi).

Write for a sample copy.

Motor Transport

FORMERLY COMMERCIAL VEHICLE

(Published by the Class Journal Co.)

239 West 39th St.

New York, N. Y.

Tasco

Gas Gauges

for

Fords & Chevrolets

\$1.25



**An accurate
reading in
two moves**

The Ford owner with a Tasco Gauge measures his gas in just two moves.

He lifts the seat and looks.

Compare this with the usual method of unscrewing the cap and poking a ruler in the tank. Any wonder owners are actually watching dealer's windows for a good gas gauge?

Tasco is no half way affair. Its cork float is well protected as is the dial. For both Ford and Chevrolet—it replaces the old cap and fits perfectly.

At \$1.25 both move fast! And in that \$1.25 there's a considerable profit for you. Will they sell? Just order a dozen or so from your jobber, put them in the window and

Watch Them Go!

*Write for discounts and full
information*

AKRON-SELLE CO., AKRON, O.



VISIBLE
Oil Pumps
and Self
Measuring
Grease
Pumps

I don't believe there was ever a manufacturer that got more real pleasure out of his business than I get out of mine. Every day reports come to me of how well pleased users are with their Handy Ben Grease Pumps and Handy Ben Visible Oil Pumps.

Every pump I ship from my factory I ship with a feeling of satisfaction and confidence in knowing that each Handy Ben is mechanically right, is built of the very best of materials and, what's more, they look it.

When a man builds a thing himself he generally knows just how good it is, so when I tell you that Handy Ben Grease and Oil Pumps are absolutely the best on the market I'm telling you the truth, backed by my unconditional guarantee.

Be sure you buy Handy Bens and you'll be another of my long list of satisfied users.



Ben Bennett
PRESIDENT

Bennett Injector Co.
MUSKEGON, MICHIGAN

*Inventors and Manufacturers of Grease
and Oil-Handling Devices*

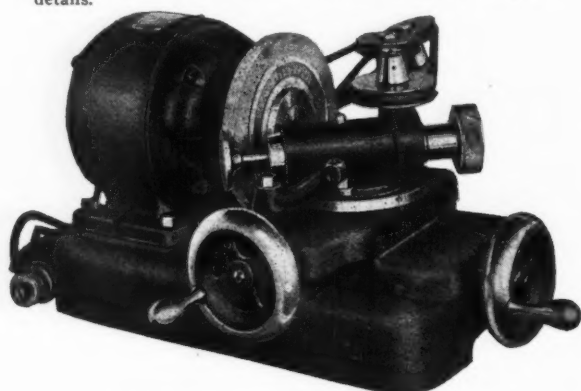


WAYNE

Valve Grinding Machine

Accuracy with Speed

make this machine most economical and efficient for your valve grinding jobs. Compact and rigidly built. Swivel head is graduated to 30, 45 and 60 degrees. Perfect contact is maintained between male and female guides, both surfaces being ground. Direct driven by high grade motor fastened on base. Can be furnished with diamond and holder for truing wheel, if desired. Write for complete details.



WAYNE TOOL MFG. CO.
Waynesboro Pennsylvania



Never such a clock at such a price!

RADIUM dial—dust proof—vibration proof—accurate—guaranteed by the youngest and fastest growing clock manufacturers in the country. And it can be removed for setting and winding by simply turning a knob which enables you to remove the entire clock from dash.

Plain Face

**MINUTE
METER**
\$2.50

Minute Meter is packed in a neat little carton. Use the platform of carton for pattern to cut dash—insert three small bolts and Minute Meter is on to stay. Made in two styles. Plain Face Dial \$2.50. Radium Dial \$3.50. Counter displays furnished that really SELL these timepieces for you. The special dash cutter at one dollar makes it the fastest flush model accessory to install. Write direct if your jobber is out of stock. Canadian prices, Plain Model \$3.50; Radium Dial \$4.50.

The LUX CLOCK MANUFACTURING CO., INC.
Waterbury - Connecticut - U.S.A.

NEW!

Tanpac is the Fibre Sheet Packing you have needed for a long time. Tough as rawhide, light in weight; easy to handle. Contains no rubber or asbestos. Recommended for automobile gaskets in use against gas, oil, water and grease. (Use Tenax Compressed Asbestos Sheets in contact with extreme heat).

Made in 1/64th, .020, 1/32 and 1/16th inch thickness—in 36 inch rolls or in sheets. A reliable, economical packing.

Buy from your jobber or write us direct.

Advance Packing &
Supply Co.,
810 Washington Blvd.
Chicago, Ill.

TANPAC

Selling Your Services

If you are ambitious for a position with larger opportunities or increased salary, make your wants known to those who can use your ability.

The fact that you are a reader of your business paper is in itself evidence that you are ambitious and progressive—probably competent, efficient and up-to-the minute.

If you are looking for an agency or a business opportunity of any kind, Spotlight Service will search the entire industry for you—it will find what you want—it is inexpensive, quick-acting, result-producing publicity.

Use your business paper to reach business men.

GET in the habit of consulting the Spotlight Department. And if what you want isn't advertised there, you can advertise for it yourself and at the trifling cost of 6 cents a word.

**6¢
a word**

Consult the Spotlight
Advertise in the Spotlight
Watch the Spotlight Grow

Complete Water and Air Service with one outfit for garages and filling stations



Milwaukee Air Power Water and Air Service builds business, attracts motorists to garages and filling stations. Hundreds of dealers have increased profits with this free service.

One Milwaukee Air Power Water System enables you to give this Complete Service. Delivers water any distance direct from source. The compressed air tank operates water pump and supplies air for tires.

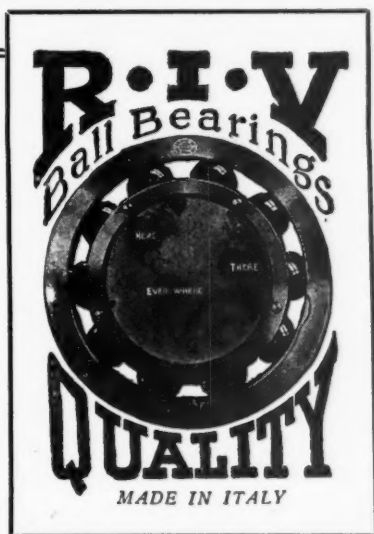
The Milwaukee Air Compressor for supplying air only, is furnished for garages and filling stations that have city water service. Milwaukee equipment is simple, dependable, automatic, economical to operate.

There are Milwaukee dealers in all sections of U. S. Write for name of dealer near you and for catalog of Milwaukee Outfits.

MILWAUKEE AIR POWER PUMP CO.
51 KEEFE AVE. MILWAUKEE, WIS.
Largest exclusive manufacturers of Air Power Pump equipment.

MILWAUKEE AIR POWER WATER SYSTEM

Instant R. I. V. Service on Popular Sizes



WE have in stock enough R. I. V. Ball Bearings in the popular sizes to take care of all the orders our distributors can give us in an ordinary year's business.

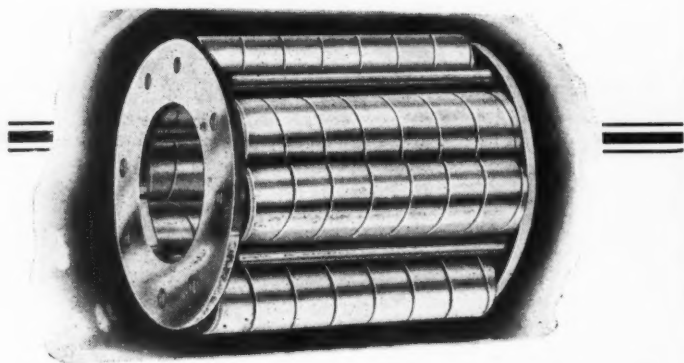
We aim to keep our distributors' stock complete at all times—but a wire order will always be filled by us the day it is received. Therefore, our service overcomes every emergency. With the quality right, the profit square, the service fast and ample, the R. I. V. is justly called "the best ball-bearing proposition in the country."

There are openings for new distributors. Write us at once—so that you can get going before the season's rush is on.



Fisk Bldg., 57th St. at Broadway, New York City

Branches: Detroit Chicago San Francisco



Jobber distribution exclusively!

Both Jobbers and Dealers are benefitting by our new sales policy of distributing Little Giant Replacement Roller Bearings directly and exclusively thru the jobbing trade—

—the Dealer thru the greater promptness of the service his jobber can render and the greater convenience of financial arrangements.

—the Jobber, because the elimination of direct factory sales competition, gives him the opportunity to profitably handle a service rightfully his.

Little Giant Roller Bearings, built to exact sizes, of finest bearing materials, with extra heavy ribs for strength—are perfect for replacement. Inquiries from legitimate jobbers are solicited.

ROLLER BEARINGS CO. OF AMERICA
Frellinghuysen Ave. & Hunter St., Newark, N. J.

We Make Bearings for Everything That Rolls

LITTLE GIANT Roller Bearings

The metal! Not the design

It makes no difference whether they are called inner rings, tension rings or shims, they look the same—but if the metal in them is not of the proper quality, scientifically heat treated to retain its resiliency and tension, the rings will not be efficient.

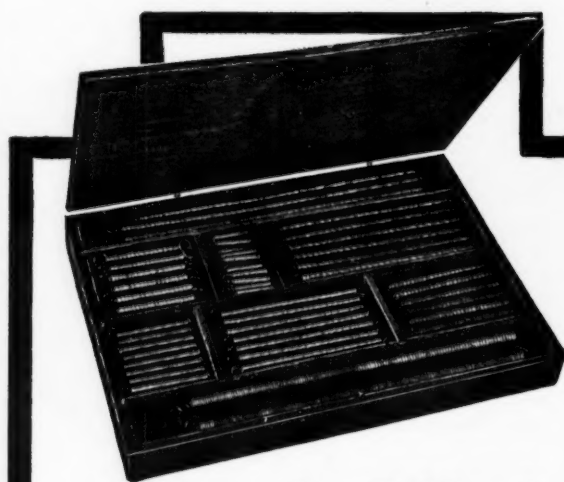
G-H Tension Rings are made of the highest grade of steel obtainable so tempered by our own special process that they will never lose their original resiliency and tension.

Fitting under regular Piston Rings, G-H Tension Rings exert a gentle, flexible pressure against the rings, automatically centralizing piston and stopping slap and oil pumping.

G-H TENSION RING CO., Inc.
Howard St. & Armory Place
Baltimore, Md.

G-H TENSION RINGS

Retail
Price—
20c each



When the Jobber's Salesman Calls—

listen in—he's got \$15.00 for you.

Peck's Improved Assortment of Springs specially selected for Garage and Service Station use costs \$5.00. The

use of these springs on repair jobs brings you in \$20.00—Plus.

Your profit is \$15.00. Worth going after?

If that salesman doesn't get around soon you'd better write your jobber. \$15.00 profit feels good in the pocket.

The Peck Spring Co.
PLAINVILLE, CONN.

Your reputation as a dealer

of dependable automotive merchandise calls for your stocking Testbestos Brake Lining. You can stake your reputation on it as we have ours. You can sell it with surety of satisfaction to the purchaser. No loss of profits thru dissatisfaction claims and demands for replacement without cost—Testbestos keeps 'em sold.

Made from extra long asbestos fibres, interwoven in strong brass mesh and well treated.

Ask for the name of the nearest Testbestos Jobber.

American Asbestos Company
Norristown, Pa.

REG. U.S. PAT. OFF.
TESTBESTOS
AUTOMOBILE
BRAKE LINING

Tested and Guaranteed!



ONLY ONE DEVICE WILL SAFELY STOP PISTON SLAP

and oil pumping and you can satisfy customers in getting rid of fouled plugs, quick carbonization and sluggish, expensive motor operation. Get back renewed power, flexibility, compression and a big gas and oil saving. No reboring necessary. The "Apex" are ready sized and shaped for use.

GENUINE APEX INNERINGS (INSIDE PISTON RINGS)

Installations have been developed by thousands of garages to a vastly profitable volume, for owners have been educated to demand this more economical, more effective, guaranteed method of repowering. This exclusive, scientific method of manufacture alone permits economical and always effective jobs. Substitutes, cut from rolls poorly designed, carelessly sized mean heavy installation expense and customer ill-will.

RETAIL PRICE 20c

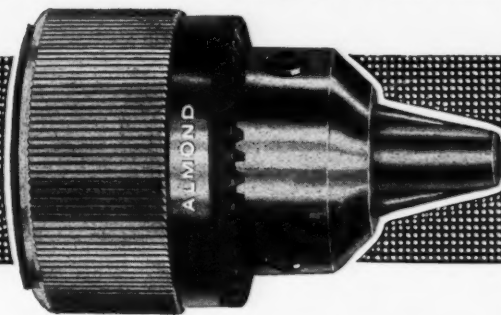
each up to 3/4" wide or 5" diam. Larger 35c. Insist on the exclusive Thomson Guarantee Tag in ordering. It protects you against imitations & guarantees results.

DEALERS—JOBBER

Get attractive facts now—it is paying hundreds of other houses.

THOMSON MFG. CO.
PEORIA Dept. C ILLINOIS
(Successors to Thomson-Friedlob Mfg. Co.)

Almond "Straight Line" Chucks

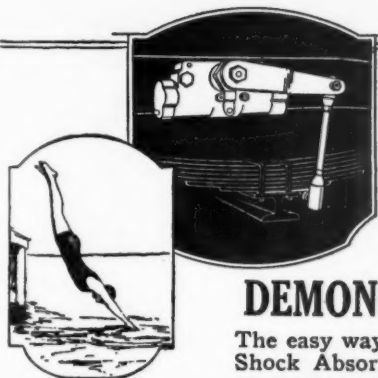


The Genuine Is Easily Identified by the "Straight Line" Milling

Experienced toolmakers and machinists have for years known and used Almond Chucks.

Until now, most three-jaw chucks have "looked alike" unless examined closely, but in the development of the Almond "Straight Line" Chuck we have made it possible for you to distinguish a Genuine Almond at a glance.

T. R. Almond Mfg. Co.
Ashburnham, Mass., U. S. A.
Established 1873



The 2-Way is the only shock absorber having a double headed piston working both ways against oil, which is permitted to escape through two adjustable regulating valves with high pressures relieved by auxiliary valves in each end of the piston working automatically. Satisfactory fluid cushioning can be obtained only by this exclusive patented method.

USERS BECOME BOOSTERS.

SELLS ON DEMONSTRATION

The easy way to sell the 2-Way Shock Absorber is to put one on your customer's car and let him experience the riding qualities of this super-shock absorber.

Its oil-cushioning mechanism automatically adjusts itself to road shocks—controls the most violent rebounds and ordinary vibration—so that the car seems to float over even the roughest going.

A demonstration practically means a sale.

Its ease of installation—wonderful performance and record of achievement make the 2-Way an exceptionally fine proposition. Distributors wanted.

Write today

AUTO SPRING
CONTROL CO.
Jamestown, New York

2WAY
HYDRAULIC
SHOCK
ABSORBERS

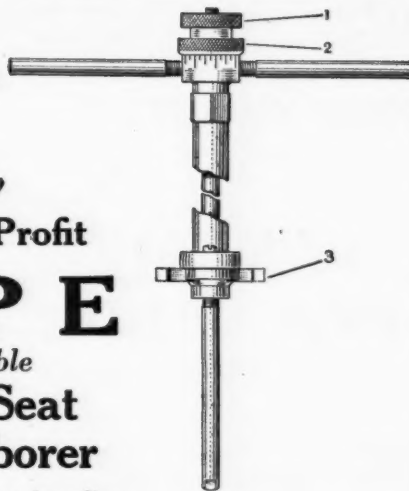
Speed
for Present
Profit

Accuracy
for Future Profit

LIPE

Adjustable

Valve Seat Counterborer



Forty minutes for a six-cylinder job. That cuts the labor time, and gets a better profit out of a flat rate.

No change in the angle of the valve seat. Instant adjustment to any diameter, either before or after starting. Perfect results every time. That's what brings the repeat business with its later profits.

Put a Lipe Counterborer into your shop for profits. The reputation it will give you for restoring any engine's early pep is alone worth the price. But you get actual cash profits, too. Send your jobber a check for ten dollars now.

R. N. ROACH CO.

Manufacturers

Rialto Bldg.

San Francisco, Cal.



More metal polish sales than ever before

THERE is far more metal polish being sold now than in the days of brass radiators. Nickered surfaces are the style on sport models and everywhere.

SKAT METAL POLISH

is something new, *different*, and better. No matter how many kinds you sell or have tried, *try this one*. It will surprise you—*just try it*.

Write for samples, prices and special proposition.

THE SKAT CO. Hartford, Conn.

HELP YOUR CUSTOMERS
TO FORGET THEIR CHAIN TROUBLES

HELP YOURSELF
TO MORE CUSTOMERS AND MORE PROFITS

By Installing Only

“WHITNEY” HIGH MILEAGE CHAINS FOR REPLACEMENTS

There are over 2,000,000 “Whitney” chains on the road today. Over 1,000,000 “Whitney” chains have been installed as original equipment on one well known make of car. Over 60,000 “Whitney” chains have been installed for replacements on the camshaft drive of one prominent motor although not used as original equipment on this car.

It is the GREATER MILEAGE that does it.

THE WHITNEY MFG. CO. HARTFORD, CONN.

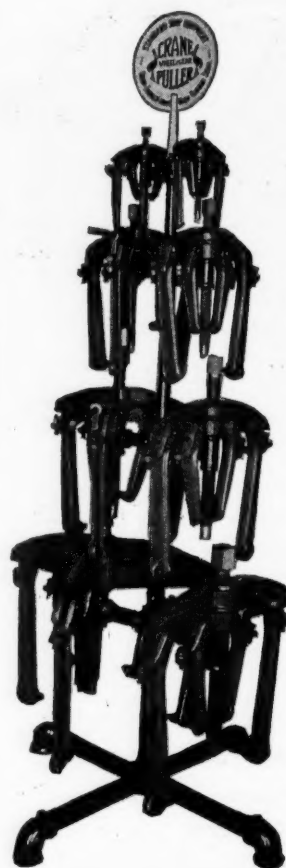
New York
L. C. Biglow & Co.,
Inc.
243 West 55th St.

Boston
George C. Steil
740 Commonwealth
Ave.

Philadelphia
R. J. Howison
624 Race St.

San Francisco
A. H. Coates Co.
615 Howard St.

Seattle
A. H. Coates Co.
1115 E. Union St.



CRANE
WHEEL & GEAR
PULLER

Compare the different styles and sizes—

Nothing helps in picking the right wheel puller like seeing them ALL at one time. The Crane Puller rack shows complete line—two styles, four sizes of each. Makes selection easy. Now showing on your jobber's floor. Don't fail to see it. Jobbers: Greatest aid to wheel-puller sales ever. Is doubling and tripling sales in many localities. And—they are FREE—cost you absolutely nothing.

Crane Puller Co.
Arlington, Mass.

Service Rim Tool

5 minutes to any job



Price
Now
Only
\$12.00
f. o. b.
Elkhart

A 100% Perfect Tire
Changing Tool Sold with a
Money Back Guarantee

ADJUSTABLE, case-hardened, corrugated grips clamped on rim by wing nut, which absolutely cannot slip, bend, kink or harm the rim.

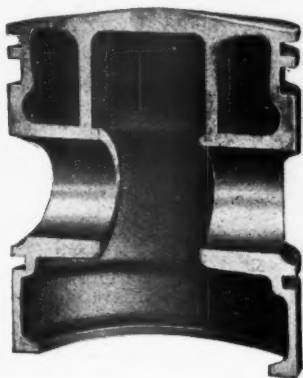
ABSOLUTE ASSURANCE of being able to handle any rim, even the worst battered and bent ones.

ADJUSTABLE to all makes and sizes of demountable split rims. SIMPLICITY of operation coupled with strength and lasting durability. Send for your service rim tool. It is waiting.

Service Mfg.
Co., Elkhart,
Indiana.

Aluminite Pistons

Wear five times longer than die-cast pistons. They will not score, pump oil or slap. These Ribs carry heat away and prevent preignition. In use in 90 per cent of the successful racing motors. Weigh only one-third that of cast iron. Make a good four perform like a six. The result of nine years of successful operation. Used by winner of Pikes Peak Race. A combination of right alloy and right design. The one great replacement for all makes of cars. We also make Aluminite connecting rods. Special prices.

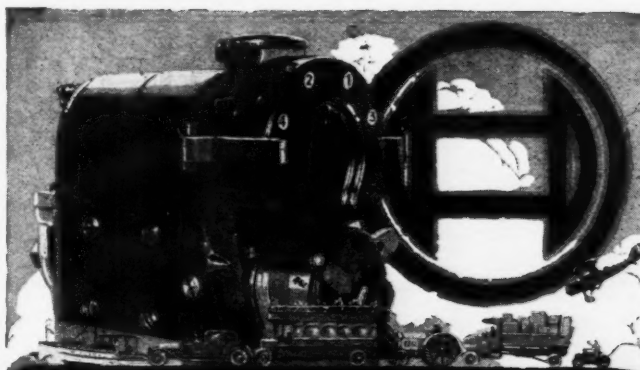


High Speed Camshafts

Replacement for all makes of cars. Permit higher speeds and give any motor more power. Tests prove this. A quality replacement at a low price. Replacement list, prices and discounts sent on request.



GREEN
ENGINEERING CO.
DAYTON, OHIO



Bosch Magneto Equipment

More than 3,000,000 genuine, original Bosch Magnetos in use the world over.

Attractive territory open.

Send for details and descriptive literature.

ROBERT BOSCH MAGNETO CO., Inc.
OTTO HEINS, President

100 West 64th Street

New York

Chicago Branch: 1302 South Wabash Ave.

Service Stations in Principal Cities the World Over.
The Genuine, Original Bosch means Robert Bosch only.



Do YOU know the evils of Crankshaft END-PLAY ?

One of the many evils of Ford crankshaft end-play is causing the high speed clutch to drag. This makes the motor hard to turn over, placing an extra load on the battery and resulting in frequent recharges.

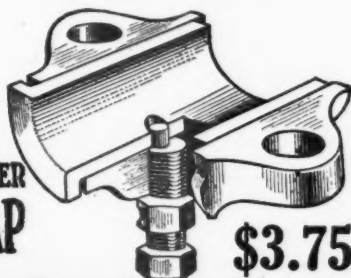
END-PLAY EASILY CORRECTED

The C-A ADJUSTABLE BEARING presents a new and better way of stopping Ford crankshaft end-play. A cheaper, easier method that positively corrects this cause of hard starting, poor lights, knocking and the many other troubles due to destructive end-play. A quality device. Easily and quickly installed—leave the motor in and simply drop the oil pan. Let us tell you how to stop end-play without "pulling" the motor.

ADJUSTABLE BEARING
COMPANY, INC.

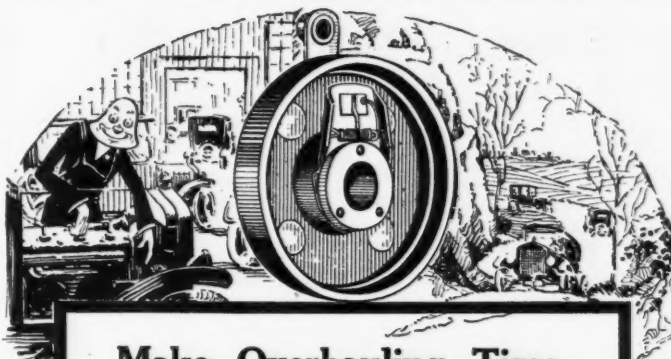
Dept. 401

BRAZIL, INDIANA



**ADJUSTABLE CENTER
BEARING CAP**

\$3.75



Make Overhauling Time Bell Timer Time

Put a season's timer insurance on your customers' Fords by using BELL Timers for this year's replacements. No kicks or comebacks from this good timer, just thousands of miles of smooth trouble-proof service.

Molded Bakelite shell, water and dirt-proof; moulded-in copper contacts; copper brush; wipe contact. Needs no oiling; will not short-circuit.

Leading jobbers and dealers
sell the BELL Timer

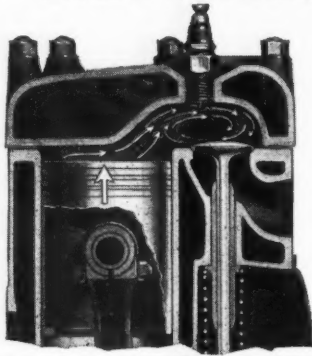
Bell Manufacturing Co.

13 Elkins St.

Boston 27, Mass.

**THE
BELL TIMER**

The Ricardo Head



produces more power and effects greater economy than is possible with a standard type of engine.

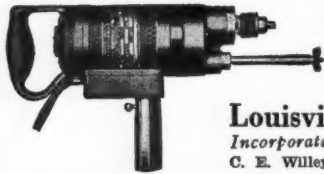
All Waukesha Motors are now equipped with the Ricardo Head.

WAUKESHA

Motor Company
ENGINE BUILDERS
Waukesha, Wisconsin
New York Detroit

Get This "Pioneer" \$65 Garage Special

Electric Drill
and Valve Grinder



Greatest time and money saver, as well as money maker, for your shop—

"It Will Do The Work"

Louisville Electric Mfg. Co.
Incorporated Louisville, Ky., U. S. A.
C. E. Willey, Pres. J. B. McFerran, Secy.-Treas.



DISSECTION OR SURGERY?

The difference between ordinary automobile lamps and Anchor Auto Bulbs is the difference between a gross dissection and a surgical operation.

The difficulties of dissection are quickly mastered by anybody, but even the most casual operation on a live patient calls for special skill.

There are twenty-one operations in making Anchor Bulbs, many of them as delicate as brain surgery. They call for trained minds and steady nerves.

This skill, moreover, is subject to impersonal, scientific inspection all along the line. Finally the whole bulb is triple-tested by a special process.

Such are the exacting demands to maintain Anchor quality. And Anchors cost no more than ordinary lamps. Less, if anything.

Shrewd buyers know all this and every time will pick:

ANCHOR AUTO BULBS
Triple-tested, Never Beaten"

Anchor Electric Company, 555 Jackson Blvd., Chicago, Ill.

There's a GILLIAM Bearing for practically every application and every location in every make of automotive equipment.

Cups Cones Rollers
Alloy Steel Throughout



THE GILLIAM MFG. CO.

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JOHNSON No. 8 Adjustable Torch

Is inexpensive but a necessity for every shop. This Torch is fitted with one Powerful Johnson Gas Burner, which will quickly melt 20-25 lbs. of soft metal. The pot can be instantly removed and used for heating soldering coppers, long rods, or Burner can be removed and used as an efficient hand torch.

Write today for descriptive literature of Johnson Appliances.



No. 8
Adj. Torch

JOHNSON GAS APPLIANCE CO.
Cedar Rapids IOWA

Pacific Coast Representative, C. B. Babcock Co., San Francisco, Calif.
New York Office: 277 La. Fayette St.

MORE PROFITS--SATISFIED CUSTOMERS



You, and every other dealer, jobber or repairman, want more profits, and more steady customers — the kind that always come to you. Boyle Valves will bring you both. Tell your customers what these valves will do and the sales will take care of themselves.

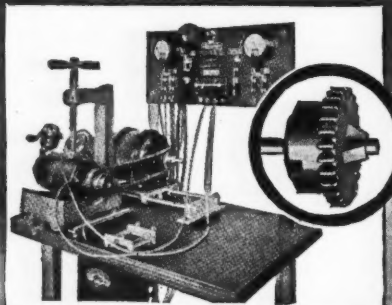
BOYLE Never Grind VALVE

Boyle Never-Grind, Silent Valves run from 50,000 to 100,000 miles without grinding, operate silently, and are guaranteed. Those are some of the points that make them fast sellers. Write for further particulars, and for our profitable distribution plan.

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With the Positive Drive and Speed Control



INCREASE YOUR PROFITS!

Starting, lighting and ignition pays bigger profits than any other branch of automotive service.

The Excelsior Test Bench

equips your shop complete for this work.

Price \$385.00

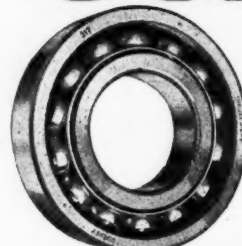
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Write for bulletin 975M

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Ask for circular "Separators, Old and New".

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BALL BEARINGS

18214

PAROB EXPANSION HAND REAMER

BLADES CUT AT DIFFERENT ANGLES

Each successive blade cuts AT A DIFFERENT ANGLE from the one before it.

No CHATTER, no DIGGING IN—even in keyed holes.

TWICE the expansion of others. All sizes. Money-back guarantee.

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THE GAMMONS-HOLMAN CO.

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Every Ford Owner Needs This Wrench In His Tool Kit

When spark plugs are rusted in, it takes a good wrench to remove them. We will guarantee our 3620 to do this trick.



The 3620 can be used on cylinder head bolts and will get the two under the dash. You can use it on water connections and other parts.

Show this number 3620 to every Ford owner, it will make sales, show you a good profit and be a fast seller.

WALDEN-WORCESTER
Incorporated
WORCESTER, MASSACHUSETTS



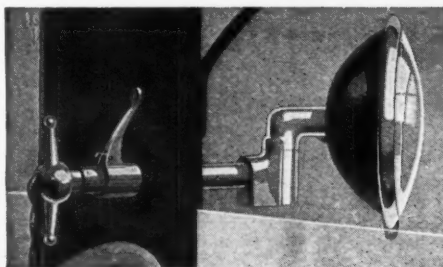
We offer the services of our Engineers in assisting Designers on layouts involving the use of Thrust Ball Bearings in any type of machine where Thrust Ball Bearings can be used. Our broad experience covers many years. We are ready to serve you at any time.

THE BEARINGS COMPANY OF AMERICA

LANCASTER, PENNA.

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Big Profit!
PFAFF
Spotlight
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\$10.00

Big profit because frequent and easy profit, as well as because of wide margin on every sale. Looks like \$50.00 worth. Stays put when the windshield is moved. Easily installed. Requires only one $\frac{3}{8}$ " hole in corner post. Light can be turned straight rear for backing up. Get a stock and make some good money quick. No kicks or service. Write right now.

PFAFF MFG. CO.

6340 Stewart Ave.

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—accounts for every labor minute



Prints the year, month, day, hour, minute, A. M. or P. M. at the exact moment the plunger is pressed—like this, for example:

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Tells when a job is started—and when it is finished. There can be no dispute over the time charge.

Absolutely automatic — except for winding. Special machines, with as many as six different words, can be made. Every machine guaranteed.

Learn the interesting details from our descriptive data.

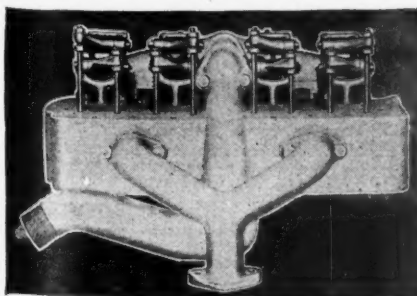
Follett Time Recording Co., 7 West Broadway, New York City

New Departure Ball Bearings



ROOF 16 OVERHEAD VALVE EQUIPMENT For Ford and Dodge Motors

ROOF 8 VALVE HEAD FOR FORD MOTOR

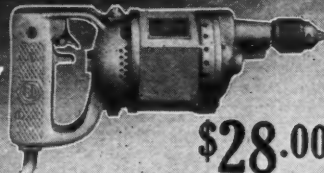


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Ford racing cars with Roof Equipment are rivals on mile and one half mile tracks of the highest priced racing cars. Doubles the pulling power of the Ford or Dodge pleasure car or truck. Hill climbing and general road work beyond wildest dreams of the owner. Complete — ready for installation — no machine work necessary. We are headquarters for all speed equipment. No matter what you want, write us. Racing quality — lowest prices. A postal card brings you complete list of our specialties.

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\$28.00

"With the Pistol Grip and Trigger Switch"

THE BLACK & DECKER MFG. CO.
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Cushion
INNER RINGS

fit behind piston rings and keep them in perfect contact with the cylinder walls at any motor speed or temperature.

RAMSEY ACCESSORIES MFG. CORP., ST. LOUIS, MO.



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Automatic
WINDSHIELD CLEANER

Pat.

"It Cleans
While
You Drive"

A good profit for you in this wonderful, fast-selling necessity.

Ask your jobber or write.

THE FOLBERTH AUTO SPECIALTY CO., CLEVELAND

Meachem Gear Rings for Fly Wheels

Quality rings at lowest prices. Get our list.

MEACHEM GEAR CORPORATION
Syracuse, N. Y.

Threaded for 1/4-in. hose. Strongly supported and counter balanced. All brass construction.



8 ft. swivel permits use of short hose. Light always OVER job. Water controlled AUTOMATICALLY by LITTLE GIANT WATER SAVER. Lowest priced combination washer and water saver. Write: THE GAYLORD MFG. CO., Paterson, N. J.

Electric contact by rotor brush. Watertight joints — automatic water control at end of hose.

GAYLORD IDEAL Overhead Washer



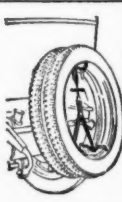
\$700 Profit in One Month

That's what one distributor made. He's only one of many doing a big business. Dealers, too, are making sales by the dozens. Few accessories in recent years have been as popular as the

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Second Spare Tire Carrier & Rim Tool Carries spare tire—also expands and contracts rim when changing tires. Two tools for the price of one. Write for details.

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CYLINDER HEAD GASKETS

Heat-proof Gas-proof Can't blow out Retain their life
Oil-proof Water-proof Last longer Keep customers sold

One for every standard make of car, truck and tractor.

The Fitzgerald Mfg. Co., Torrington, Conn.



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Quickly installed on Fords

Works independent of throttle. Adjusting nut sets idling speed. Complete with heel rest, screws and adjusting nut, in attractive carton. Ask your Jobber.

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"In Stock - Not Over a Day Away"

Write Milwaukee Die Casting Co., Milwaukee, Wis., for name of one of our 500 distributors nearest you.

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QUICK GETAWAY FOR FORDS IN THE COLDEST WEATHER

The flattened design of the Krafve Intake Mixer Manifold spreads out and completely vaporizes the gas. Gives a quick start, easier pick-up, low throttle on direct drive, more speed and mileage. Easy to instal—excellent profit. List \$5.00. Write for proposition.

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ALL THE NAME IMPLIES

STEERING KNUCKLE BOLTS AND BUSHINGS
PISTON PINS, PISTON PIN SET SCREWS

Automotive Division

KING SEWING MACHINE CO.
BUFFALO, N. Y. BRIDGEBURG, ONT., CAN.

DON'T

Turn Down a Rewind Job

Send it to us. We are "Armature Winding Specialists."

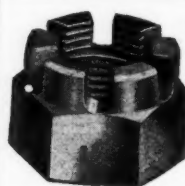
Profit for you in our service—Ford generator armature rewind—\$1.95. Other prices in proportion. All work guaranteed. Write for catalog and prices on all generators.

H. M. FREDERICKS CO.,

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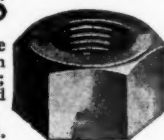
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They must be perfect, we use them ourselves. Milled from bar; U. S. S. and S. A. E.; Semi-finished nuts; castellated nuts and slotted nuts.

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EVERYDAY

PISTON RINGS

Interlocking joint eliminates all filing, fitting and joint leakage.

Priced to be profitable to dealer and jobber.

ROYAL PISTON RING CO., INC., BATH, N. Y.

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PISTON RINGS

A high grade step cut at a low price; lathe turned individually gauged.

Priced to be profitable to dealer and jobber.

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MAKE \$150 TO \$300 MONTHLY

Buy an HB 8-Hour Constant Potential Battery Charger on long easy terms, more than paid by big monthly profits. Small cash payment puts HB outfit in your shop, complete ready to connect up and operate. 30 days' free trial on money-back guarantee. Only \$20 monthly pays for your outfit. Write today for information.

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Let us send you our FREE Catalogue on

Huetter's Fly-Wheel Gear Bands

Huetter Machine & Tool Co.

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BATTERY SERVICE EQUIPMENT!

UNITRON
Rectifier

PORTOSTAT
Test Set

FOREST ELECTRIC COMPANY

New and Wilsey Streets

NEWARK, N. J.

\$17.50 COLONIAL CYLINDER HONES \$17.50 PRICES REDUCED ONE HALF

You can now buy the Colonial Cylinder Hone, an approved tool for this class of work and one of the best Hones on the market at \$17.50 each F. O. B. Kalamazoo. Made in three sizes, one, two and three, No. 1 2 3/4" to 3 1/4", No. 2 3 1/4" to 3 3/4" here, No. 3 3 3/4" to 4 1/4".

Colonial Cylinder Hones are now being used by some of the best factory Service Stations in the country as well as by numerous Service Station Owners.

Colonial Gear & Manufacturing Co., Kalamazoo, Mich.



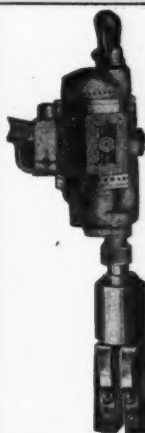
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Water Circulating Pump
For Ford Cars and Trucks

Is as reliable as the Ford Car itself and assures a positive cooling system that constantly functions. No more overheating—No more freezing in travel—Made engineeringly correct of best materials—quickly and easily installed. Write for Dealer Discounts and complete information.

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USE A STORM HONE

It handles an important part of your cylinder work. Takes all sizes of cylinders from 2 3/4 to 8". The deep, heavy, wide faced stones on the Storm Hone mean longer life, faster cutting and smoother finishing as well as freedom from chatter and stone breakage. Complete and with extra equipment only \$40.25.

Write for the Storm Book,
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STORM Mfg. Co.

406 A Sixth Ave. So.
Minneapolis



Minn.



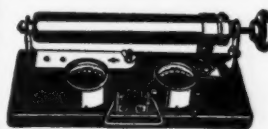
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And Make Two Profits with

Warford

AUXILIARY TRANSMISSION
Two-Ton Capacity—High Speed

Ask your nearest distributor to demonstrate it or write us.

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TEST YOUR BATTERIES

by the Chart Method. Something New. Send for free booklet, today.

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Electric Controlling Apparatus

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LINENDOLL EXHAUST HEATER

Attractive in appearance, with cleaning features of removable heating coil with no connecting joints inside the heater pan to leak. Meets instant approval. No odor or noise. Easily installed and operated. Will boost your winter sales—get our attractive trade proposition.

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Norwalk, Ohio

Dealers
Every
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INSIST UPON



The Original

SILENT TIMING GEARS

Made of CELORON

Dalton & Balch, Inc.

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Million
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BRUNNER

AIR COMPRESSORS
FREE

Write for the Book "AIR PROFITS"

describing many new uses for compressed air. Shows how to make an air compressor earn greater profits.

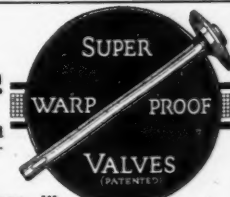
BRUNNER MFG. CO.
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FOR ALL
MAKES of
MOTORS
QUALITY PISTON
PINS and WARP
PROOF VALVES

Write us for name and
address of jobber near-
est you.

THE TRINDL CO.
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SUPER

WARP PROOF

VALVES

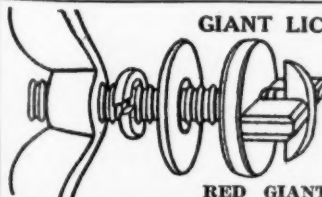


"Detroit" Tire Lock Sells On Sight

\$5.00 Neat and business-like in appearance, this Yale or Corbin type lock can not be picked. The wedge is so designed that it can not be twisted or broken. Handsomely finished in black enamel, the entire lock resists water, oil, grit and dust. Locked on or taken off instantly. Retail price \$5.00.

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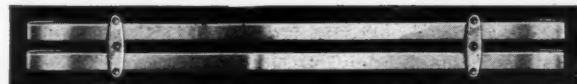
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When you lose a license plate the cost is from \$2.50 to \$5.00. With Giant license plate holders you need not fear losing your license plate as they are fastened permanently to the holders and can be installed in one minute's time. Guaranteed to give perfect satisfaction or money refunded. If your jobber cannot supply you, write us direct.

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Spring-steel, Oil-tempered Bumpers in Six Complete Styles. Special Direct to Frame Attaching Arms for all Leading Makes of Cars.

We invite comparison in appearance, quality and price.

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—the Solution of the
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The finest quality hand blown triple strength crystal sheet glass cut to exact size and finished on one edge. Packed in a manner that minimizes breakage. Jobbers and dealers can carry stock with little chance of damage. Write for complete details.
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"The Best-Equipped Shop
Gets the Business"



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Plastic Metallic Packing

Patented

Stops the leaks in automobile water pumps. Mold it with your fingers. Makes a smooth metal bearing—adjustable and practically frictionless. At your Jobbers—Get it today. It does the trick. Put up in 1 lb. cans. If your Jobber doesn't carry it, write us direct. Price \$1.65 per pound, f. o. b. Conneaut, Ohio.

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Lamps and Accessories

A quality group of fast selling items for every automotive requirement.

Organized to supply the jobber and dealer exclusively.

THE CINCINNATI VICTOR CO.

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CASE

MOTOR CARS

J. I. CASE T. M. COMPANY
Racine Wisconsin



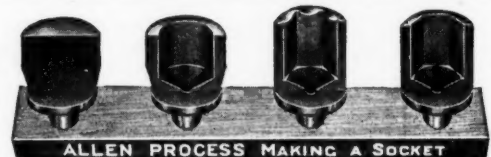
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Always used where safety and service are the first and only consideration.

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Cold-Drawn
Sockets



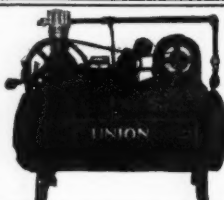
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Wrench
Sets

The Allen Manufacturing Company, Hartford, Conn.

Built For Long Life

In filling tires be sure to get the details of this Model 150 Union Air Compressor of 2 cylinders. Capacity 5 cu. ft. per minute.

Union Equipment Co.
Butler, Pa.



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Designed to answer the wants of the motorist. They provide the greatest protection to the car, yet their rugged strength is concealed by their lines of beautiful construction. They are the bumpers of today and tomorrow. Ask for Catalog No. 11.

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Jobbing Division: London Guarantee & Accident Bldg., Chicago.

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Taps, Dies, Cutters, Drills, Reamers
Send for Catalog

ALVORD REAMER & TOOL COMPANY
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"2-Point-Test" \$2.50

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"Guards
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Battery's
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Here at last is a battery tester of very finest quality. It is absolutely guaranteed to be accurate—every instrument must pass the two-point test. Green ribs of celluloid make sticking of float impossible. Write for details.
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Lorentzen Headlight Kontrol

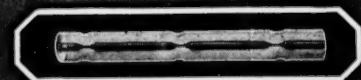
AN AUTOMOTIVE
NECESSITY THAT SELLS

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KESTER And-Core WIRE SOLDER

"REQUIRES
ONLY
HEAT"

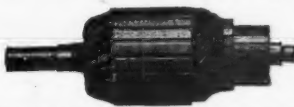


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\$2.00



MOST ANY
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Combines the simplicity of the one-piece ring with the snug fit and oil-scraping ability of more complicated designs. Good profit and fine results. Write for prices and discounts.

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Handles all cars for all kinds of work. Great for spring and chassis repairs. Saves time—makes money for you. Priced RIGHT. Write for catalog.

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"The Signal with a Smile"



At dealers or direct
THE FULTON CO.
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INSHIELD DRIVING LIGHTS

INSIDE THE WINDSHIELD—NO GLASS TO CUT

INSHIELD 8
4 1/2 in. diameter. Heavy
Nickel or Black Enamel.
Made of heavy sheet brass.
21 c. p. Mazda precision
type tipless bulb, silver,
triple-plated reflector \$7.50

INSHIELD SENIOR
5 1/2 in. diameter. Nickel
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best inner-controlled driving
light made.
\$10.00

The Inshield Products Co., Toledo, Ohio
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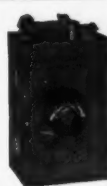
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Stevens SPEED UP Tools

Ask for
Shop Catalog

OVER 100 ACCURATE SHORT-CUTS
TO GOOD WILL AND PROFIT ~ ~
"Thru your jobber—his service is economy"

STEVENS & COMPANY
375 BROADWAY NEW YORK

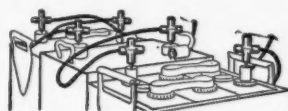


Real High Tension Ignition for Ford Cars

Varley Transformers eliminate nearly all chronic ignition trouble. Save gas. Add power. Keep plugs clean. Stop misfiring. Save repairs. \$2.50 each. Write for full particulars.

The Autocoil Co., Jersey City, N. J.

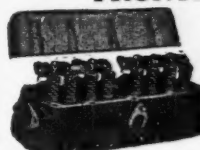
SHURO BATTERY CONNECTORS



A tap with a hammer anchors them into battery terminal—like a nail in a block of wood. Positive metal-to-metal contact. Built to last for years.

BURTON-ROGERS CO.
26 Brighton Ave., Boston

FRONTENAC CYLINDER HEADS and FRONTY-FORDS



The remarkable showing of the Fronty-Ford in the 500-Mile Race at Indianapolis May 30 was due solely to the performance of the Frontenac Cylinder Head. This Head is adapted for use on your Ford car by its designer and builder, Arthur Chevrolet. Write for FREE Catalog. Book, "How to Build a Fronty-Ford," \$2.00; free with orders of \$50.00 or more.

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VESTA STORAGE BATTERY

We can prove to any automobile dealer that there's money in selling Vesta Batteries and there's no "grief." We say we can prove it. Ask us to do it.

Vesta Battery Corporation Chicago, Ill., U. S. A.

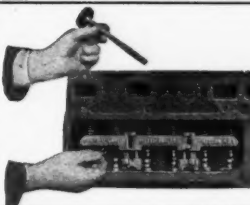
Barty Parts Make a Better Axle



—they act as a differential semi-lock which makes your axle essentially a solid axle on straightaways and allows the differential to function at the turns. Simple, easily installed. Get the details.

Barty Axle Corp.
Syracuse, N. Y.

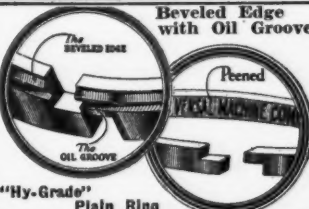
BARTY
CONTROL
PARTS



SPEED-O

Multiple Valve Lifter
LIFTS 8 TO 12 VALVE SPRINGS
IN LESS THAN 30 SECONDS

Manufactured by
SPEED-O MULTIPLE VALVE LIFTER CORP.
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2 rings that cover every need

Ground or turned finish
Attractive jobber's proposition

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**PISTON RINGS
PISTONS
PINS
BEARINGS**

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*There's a Fisk Tire of extra value in every size,
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Adjustable. Two sizes will clamp any hose of
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PISTON RINGS

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ness, sold at almost
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Attorney-at-Law and Solicitor of Patents
C. L. PARKER

Formerly Member Examining Corps., United States Patent Office

American and foreign Patents secured. Searches made to determine patentability and validity. Patent suits conducted. Pamphlet of instruction sent upon request.
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MISCELLANEOUS

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Cylinder Blocks Magneto (all kinds)

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New Gears (all kinds) Starters

Used Gears (all kinds) Rear Ends

400 Motors of all kinds in stock at all times

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Largest Auto Wreckers in the Country

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We have wrecked over a thousand cars.

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New price list just out.

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"The Old Reliable"

Offers you quick service, quality parts and absolute satisfaction—and our prices are a little lower. We are an old reliable house and all that implies. Our stock of parts is one of the largest in the country—from a 1907 one cyl. Reo to a 1921 Overland Four.

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MISCELLANEOUS

AUCTION SALE

of the property of

THE DART TRUCK AND
TRACTOR CORPORATION
WATERLOO, IOWA

Pursuant to the order of the District Court of Black Hawk County, Iowa, the undersigned Receiver of the Dart Truck & Tractor Corporation will sell at public auction all of the personal property and assets of said corporation (other than bills and accounts receivable). Said property, in general consists of machinery, tools, parts used in the manufacture of trucks and tractors and for the service department, and a large quantity of supplies and materials, iron, steel, etc., etc.

The object of the sale is the closing up of the business of the Dart Truck & Tractor Corporation by disposing of all its remaining assets, and parties who can use any or all of the property to be sold should attend the sale. The sale will be held on WEDNESDAY, MARCH 19, 1924, beginning at ten o'clock A. M. AT THE PLANT at the corner of Aynsborough and Stratford Ave., Waterloo, Iowa.

W. H. JOHNSON, Receiver

FOR SALE

One new, Model W., Cleveland Tractor and one new, Double Gang, Oliver Tractor Plow. Both Plow and Tractor priced to sell at \$800

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Maysville, Ky.

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Wanted to sell a locking radiator cap of known merit and distinction not in any patent litigation. This cap is now in production.

Full co-operation on production and advertising.

Full Particulars on Request

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EAGAN REALTY CO.

City Bank Bldg. Syracuse, N. Y.

FOR SALE—Laurel 16-Valve Head Type C. with two Zenith Carburetors 1 1/2 complete. Never used. Address Box 6121, care MOTOR AGE, 5 S. Wabash Ave., Chicago, Ill.

FOR SALE—Cheap, New Fairbanks-Morse burning-in machine for Ford motors. Also 35 ton hydraulic press. M. A. Schaaf, Eau Claire, Wis.

WANTED—To purchase a good used cylinder reborer machine or hone. Butts, 211 Chestnut St., Athens, Pa.

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BRANCH MANAGER.

Willis Overland, Inc. Denver, Colo.

SALESMEN WANTED—Manufacturer of Tire-Covers, Seat Covers and Top Recoverers wants salesmen who will call on retail trade East of Mississippi River. Liberal commission. State experience and territory wanted. Address Box 6115, care MOTOR AGE, 5 So. Wabash Ave., Chicago, Ill.

WANTED: Salesmen or Selling Agencies, also Distributors in all Territory to sell our Mirror Bright Auto Polishes. Absolutely nothing like them. Attractive proposition. Territory going fast. Write us: Southern California Sales Co., Manufacturers, Pasadena, Calif.

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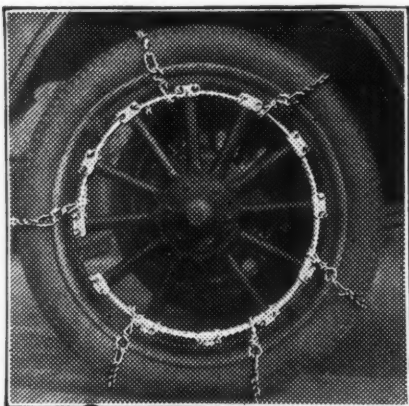
SNAP-ON WRENCH CO., Mfrs.

Milwaukee, Wisconsin

Snap-on

INTERCHANGEABLE
Socket Wrenches

Travelon NON-SKID ATTACHMENT



Profits easy to get and frequently gotten are what we offer you with Travelon. Car-owners like it because they don't have to jack the car up, and can snap the cross-chains on or off the permanent rings in deepest mud or snow without dirtying clothes. That's the reason you sell sets of Travelon often. Write for information.

THE **SHAW-WALTON CO.**
PONTIAC, ILLINOIS

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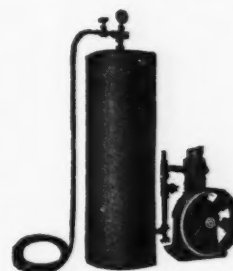


Real Air Service in This Curtis

THE above illustration is the Curtis Style V Two-stage Outfit—one of the family of popular Curtis Outfits—the last thing in air compressor design—free of complicated parts—built for hard usage and will be on the job all the time. $\frac{1}{4}$ to 3 H.P.—automatic.

Single and Two-stage Many Sizes and Styles

We manufacture a complete line of single and two-stage outfits. You are sure to find one that will meet your particular needs in style, size and price. Write at once for full information and descriptive literature. Use the coupon below, or a postcard will do.



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1527 Kienlen Ave. St. Louis, Mo.

Branch Offices:

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Address.....		
Jobber's Name.....		
Address.....		

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KOKOMO RUBBER COMPANY

Kokomo, Indiana

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every Ford in your town—is
a live, receptive prospect for the
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A few minutes talk or a short dem-
onstration and the sale is closed—
and each sale makes a salesman
for you.

The Bosch Ignition System for
Fords gives amazing results to
thousands and thousands of Fords—
quick starting—smooth running—
no bucking or stalling—saves gas
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a big national adver-
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the Bosch Guarantee.

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\$12⁷⁵

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An *improved*
truck  A com-
plete line  A

great name
 *Progress!*


REPUBLIC

Yellow Chassis

Trucks

